DFI®

EC800

Fanless Embedded System
User's Manual

A26060514

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FCC and DOC Statement on Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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About this Manual

An electronic file of this manual is included in the CD. To view the user's manual in the CD, insert the CD into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear. Click "User's Manual" on the main menu.

Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequencial damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.

2. Wear an antistatic wrist strap.

3. Do all preparation work on a static-free surface.

4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.

5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or con nectors by their ends.

Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:
- Use the correct AC input voltage range.

To reduce the risk of electric shock:
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

Safety Precautions

- Use the correct DC input voltage range.
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
- Keep this system away from humidity.
- Place the system on a stable surface. Dropping it or letting it fall may cause damage.
- The openings on the system are for air ventilation to protect the system from overheating. DO NOT COVER THE OPENINGS.
- Place the power cord in such a way that it will not be stepped on. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and that it matches the voltage and current marked on the system's electrical range label.
- If the system will not be used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- If one of the following occurs, consult a service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated the system.
  - The system has been exposed to moisture.
  - The system is not working properly.
  - The system dropped or is damaged.
  - The system has obvious signs of breakage.
- The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace the outlet.
- Disconnect the system from the DC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

About the Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- 1 EC800 system unit
- 1 Power adapter: 60W
- 6 Mounting screws for Mini PCIe module
- 1 DVD disk includes
  - Manual
  - Drivers
- 1 Quick Installation Guide

Optional Items

- Wall Mount
- VESA Mount
- DIN Rail Mount
- Power Cord

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Before Using the System

Before powering-on the system, prepare the basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- Storage devices such as CFast card, Mini PCIe and/or mSATA card, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

Chapter 1 - Introduction

Overview

with DVI-I

with VGA and micro HDMI

Key Features

	EC800 Series
Processor	Intel® Atom™ D2550/N2800/N2600 processors
Chipset	Intel® NM10
LAN	2 LAN ports
COM	2 COM ports
Display	DVI-I; or VGA and micro HDMI
USB	4 Type A USB 2.0/1.1 ports at the front panel
Audio	Mic-in and Line-out
DIO	1 DB-9 port

Specifications

Processor System	• CPU: - Intel® Atom™ D2550, 1.86GHz, 2x 512K L2, 10W TDP, dual-core - Intel® Atom™ N2800, 1.86GHz, 2x 512K L2, 6.5W TDP, dual-core - Intel® Atom™ N2600, 1.60GHz, 2x 512K L2, 3.5W TDP, dual-core • Chipset: - Intel® NM10 Express Chipset
Memory	• 2GB DDR3 onboard (default) - Intel® Atom™ D2550/N2800 supports up to 4GB* (optional)
Graphics	• Intel® GMA 3650 (Intel® Atom™ D2550/N2800) • Intel® GMA 3600 (Intel® Atom™ N2600) • 1 DVI-I port supports display resolution up to 1920x1200 • 1 VGA port supports display resolution up to 1920x1200 • 1 micro HDMI port supports display resolution up to 1920x1080 • Smooth Video Playback - Supports hardware decoders (H.264, VC-1, MPEG-4) with Full HD 1080p video playback capability
Storage	• 1 CFast socket • 1 mSATA module via a Mini PCIe slot
Ethernet	• 2 Intel® WG82574L Gigabit Ethernet controllers
Audio	• Realtek® ALC886 7.1-channel High Definition Audio • 1 line-out and 1 mic-in
COM	• 2 DB-9 ports - 1 DB-9 port supports RS232/422/485 COM port - 1 DB-9 port supports RS232/422/485 COM or isolated 2-bit In and 2-bit Out DIO • Supports RS485 auto direction control
Expansion	• 3 Mini PCIe slots - 2 slots for communication : One slot supports PCIe x1, USB, and LPC signals for Wi-Fi module or LPC module : One slot supports PCIe x1, USB, and 3G signals for 3G or GPRS module - 1 slot for storage : Supports mSATA module • 1 SIM card socket • 1 CFast
DIO	• 1 isolated 4-bit DIO via the DB-9 port (signal+power)* (optional)
Power	• 9~24V DC power input voltage
Environment	• Temperature - Operating: 0°C ~ 60°C - Storage: -40°C ~ 80°C • Humidity - Operating: 10% to 85% non-condensing - Storage: 10% to 90% non-condensing

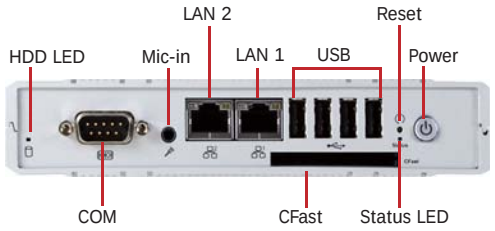
Front I/O Ports	• 1 DB-9 RS232/422/485 COM • 1 mic-in • 2 LAN • 4 USB 2.0 (Type A) • 1 CFast socket • 1 status LED • 1 HDD LED • 1 reset button • 1 power button with LED
Construction	• Aluminum
Mounting	• Wall/VESA/DIN Rail mount - Mounting brackets and screws* (optional)
Dimensions	• 161mm x 32mm x 108.2mm (W x H x D)
Weight	• 700g
OS Support	• Windows XP, WES 2009, POSReady 2009, Windows 7, WES 7 • Linux (Distribution available upon request)
Other Features	• Watchdog Timer function
Certification	• CE • FCC Class A • RoHS • UL • CCC • KC

Rear I/O Ports	EC800-CD2040	EC800-CD1440	EC800-CD2041
DC-in power jack	1	1	1
Wi-Fi/3G module antenna hole	2	2	2
Line-out	1	1	1
DVI	1	1	0
VGA:DB-15 D-sub	0	0	1
micro HDMI	0	0	1
COM: DB-9	2	1	2
DIO: DB-9 (signal+power)	0	1	0

Note:
*Optional and is not supported in standard model. Please contact your sales representative for more information.

Getting to Know the EC800 Series

Front View



USB Ports
Used to connect USB 2.0/1.1 devices.

LAN Ports
Used to connect systems to a local area network.

Mic-in
Used to connect an external microphone.

COM Port
Used to connect serial devices.

CFast Socket
Used to insert a CFast card.

Status LED
This LED will blink when the system is in the standby mode.

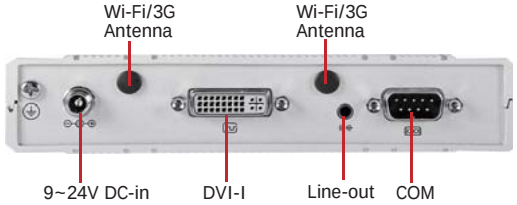
HDD LED
Indicates the status of the hard drive.

Power Button with LED
Press to power-on or power-off the system.

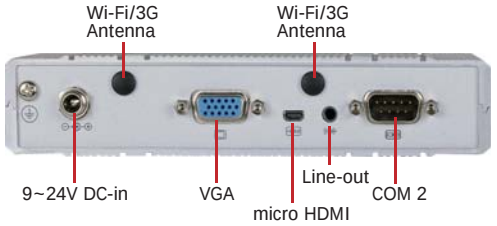
Reset Button
Press to reset the system.

Rear View

with DVI-I



with VGA and micro HDMI



Wi-Fi/3G Antenna Hole
Used to connect to a Wi-Fi antenna.

DVI-I Port
Used to connect a DVI device.

VGA Port
Used to connect a VGA device.

micro HDMI Port
Used to connect a micro HDMI device.

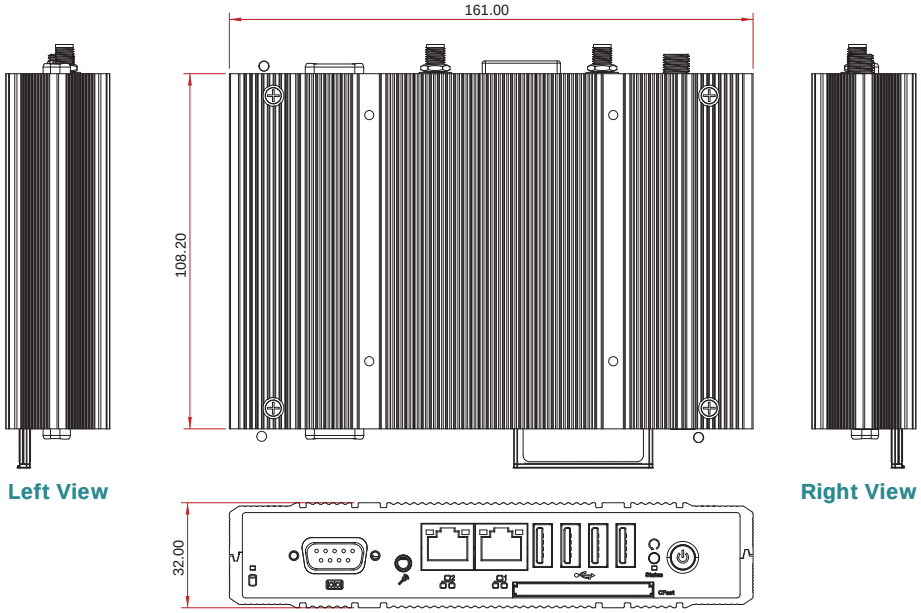
COM Port
Used to connect serial devices.

Line-out
Used to connect to a speaker.

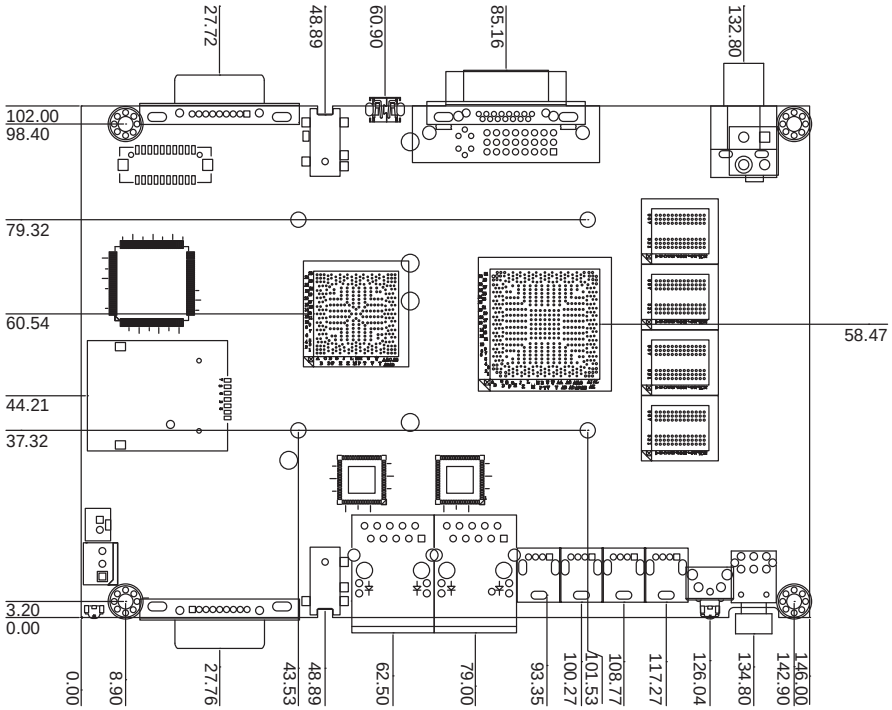
DC-in jack
Used to plug a power adapter.

Mechanical Dimensions

Chassis Dimension



Motherboard Dimension



Chapter 2 - Getting Started

Preparing the System

Before you start using the system, you need the following items:

- CFast card
- AC power adapter
- USB keyboard
- USB mouse
- CD-ROM drive (for installing software/drivers)

Installing Devices

The following are devices that can be installed in the system.

- CFast card
- Mini PCIe card

Configuring the BIOS

To get you started, you may need to change configurations such as the date, time and the type of hard disk drive.

1. Power-on the system.
2. After the memory test, the message “Press DEL to run setup” will appear on the screen. Press the Delete key to enter the AMI BIOS setup utility.

Installing the Operating System

Most operating system software are provided in a CD therefore you need to install a CD-ROM drive in order to use the CD.

Make sure a 2.5” SATA drive is already installed.

1. Refer to the following chapters for information on connecting a CD-ROM drive and installing a SATA drive.
2. Refer to your operating system manual for instructions on installing the operating system.

Installing the Drivers

The system package includes a CD disk. The CD includes drivers that must be installed to provide the best system performance. Refer to the Supported Software chapter for instructions on installing the drivers.

Chapter 3 - Installing Devices

Removing the Chassis Cover

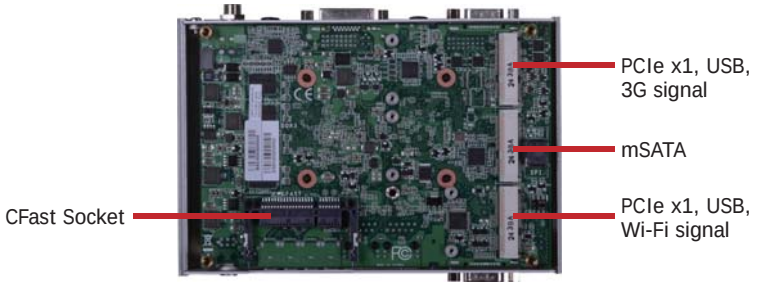
1. Make sure the system and all other peripheral devices connected to it has been powered-off.

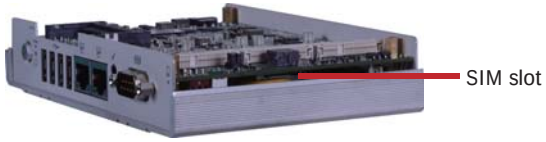
2. Disconnect all power cords and cables.

3. The 4 mounting screws on the bottom side (labeled side) of the system are used to secure the cover to the chassis. Remove these screws and then put them in a safe place for later use.

4. After removing the mounting screws, lift the cover up.

5. The CFast socket, and Mini PCIe/mSATA slot are readily accessible after removing the chassis cover. And the SIM slot is also accessible at the side of the system board.

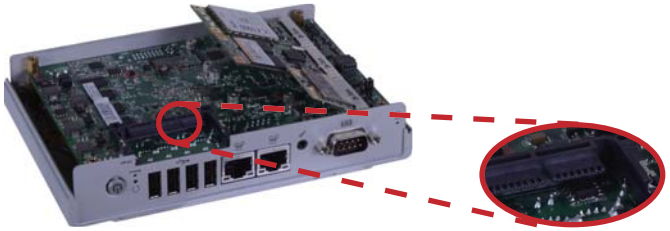




Installing a CFast Card

1. Locate the CFast socket on the system board.

2. Note the key on the socket. The key ensures the CFast card can be plugged into the socket in only one direction.

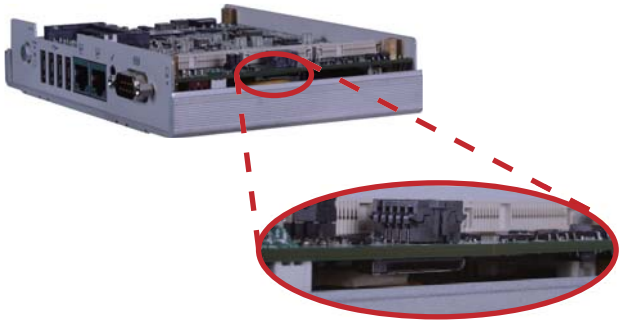


3. Insert the CFast card until it is completely seated in the socket.

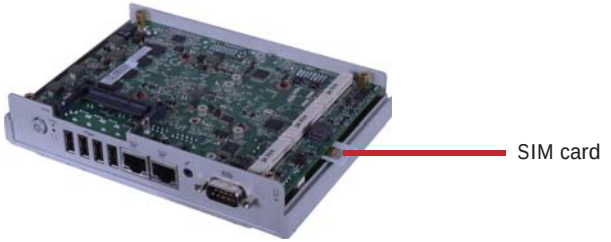
Note:
Before powering-on the system, make sure to insert the CFast card.

Installing a SIM Card

1. Locate the SIM slot on the system board.



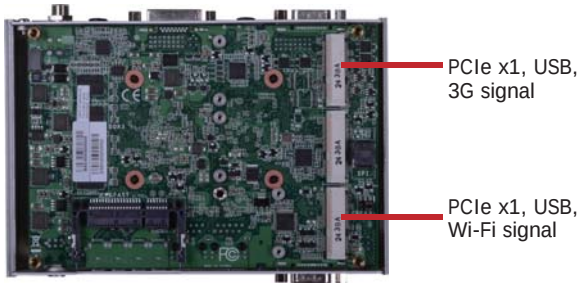
2. Insert the SIM card in the SIM slot, and push the SIM card to take the card out of the slot.



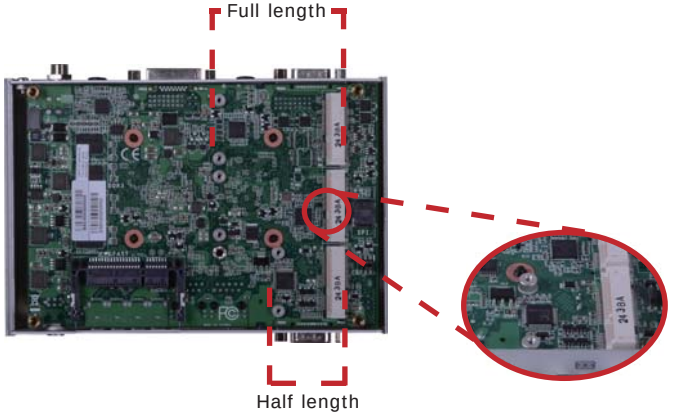
Installing a Mini PCIe and/or mSATA card

Installing the Mini PCIe Card

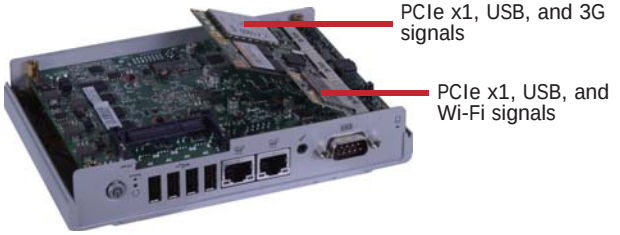
1. Locate the Mini PCIe slot on the system board.



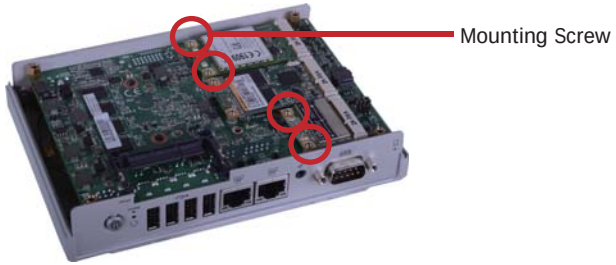
2. The system board is equipped with 2 Mini PCIe slots. The Mini PCIe slot supports full length and half length Mini PCIe card. Note the key on the slot. The key ensures the Mini PCIe card can be plugged into the slot in only one direction.



3. Grasping the Mini PCIe card by its edges, align the card into the slot at an approximately 30 degrees angle. Apply firm even pressure to each end of the card until it slips down into the slot. The contact fingers on the edge of the card will almost completely disappear inside the slot.

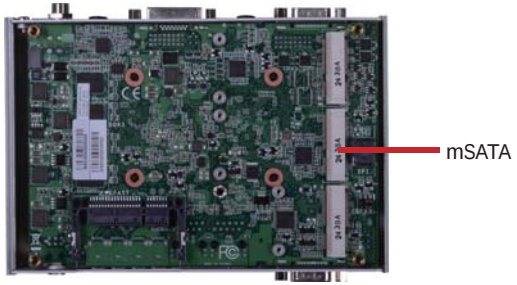


4. Push the Mini PCIe card down and use the provided mounting screws to secure the card on the system board.

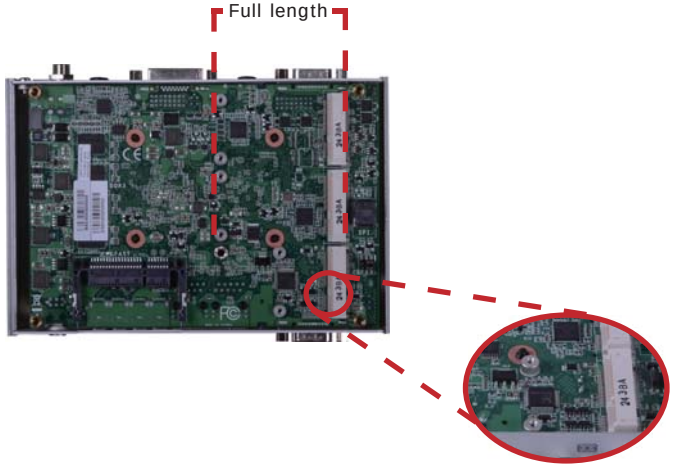


Installing the mSATA Card

1. Locate the mSATA slot on the system board.

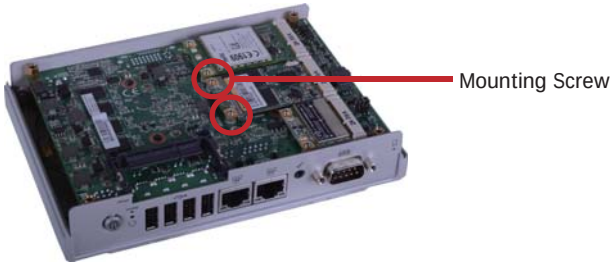


2. The system board is equipped with a mSATA slot. The mSATA slot supports full length mSATA card. Note the key on the slot. The key ensures the mSATA card can be plugged into the slot in only one direction.



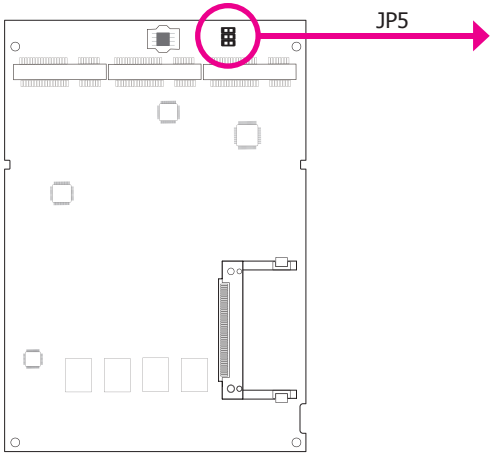
3. Grasping the mSATA card by its edges, align the card into the slot at an approximately 30 degrees angle. Apply firm even pressure to each end of the card until it slips down into the slot. The contact fingers on the edge of the card will almost completely disappear inside the slot.

4. Push the mSATA card down and use the provided mounting screws to secure the card on the system board.



Chapter 4 - Jumper Settings

Power-on/ Clear CMOS



1-3 On: Power-on via power button (default)

2-4 On: Normal (default)

3-5 On: Auto Power-on

4-6 On: Clear CMOS

Power-on

JP5 is used to select the method of powering on the system. If you want the system to power-on whenever AC power comes in, set JP5 pins 3 and 5 to On. If you want to use the power button, set pins 1 and 3 to On.

When using the JP5 "Power On" feature to power the system back on after a power failure occurs, the system may not power on if the power lost is resumed within 5 seconds (power flicker).

Note:
In order to ensure that power is resumed after a power failure that recovers within a 5 second period, JP5 must be set to pins 3-5 and the "AC Power Lose" in CMOS is set to "On".

Clear CMOS

If you encounter the following,

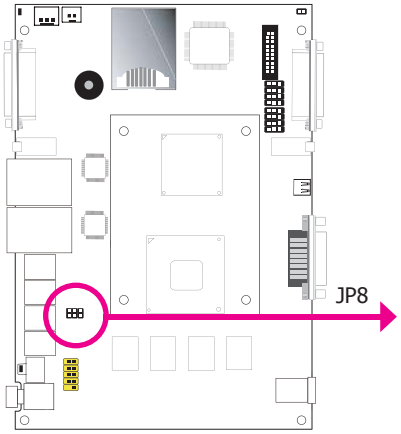
a) CMOS data becomes corrupted.
b) You forgot the supervisor or user password.

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

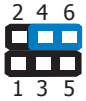
1. Power-off the system and unplug the power cord.
2. Set JP5 pins 4 and 6 to On. Wait for a few seconds and set JP5 back to its default setting, pins 2 and 4 On.
3. Now plug the power cord and power-on the system.

USB Power Select



USB 0-1

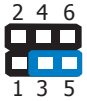
2-4 On: +5V



4-6 On: +5V_standby (default)

USB 2-5

1-3 On: +5V

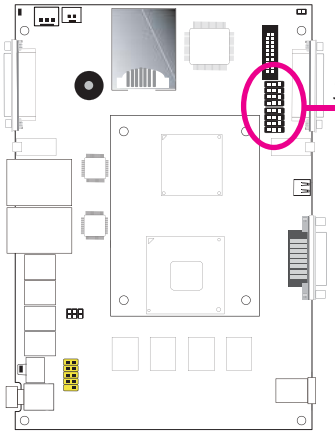


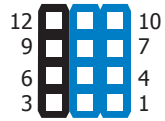
3-5 On: +5V_standby (default)

These jumpers are used to select the power of the USB ports. Selecting +5V_standby will allow you to use a USB device to wake up the system.

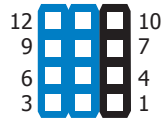
Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the +5V_standby power source of your power supply must support ≥2A.

COM2/DIO Select





1-4-7-10, 2-5-8-11
On: COM2 (default)



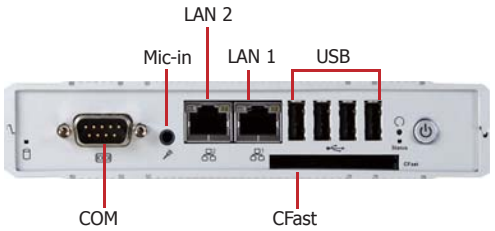
2-5-8-11, 3-6-9-12
On: DIO

The system board uses JP9 and JP10 to select between RS232/422/485 COM2 or isolated 4-bit DIO at the rear panel.

Note:
You cannot use COM2 and DIO at the same time. Please set up JP9 and JP10 at the same time.

Chapter 5 - Ports and Connectors

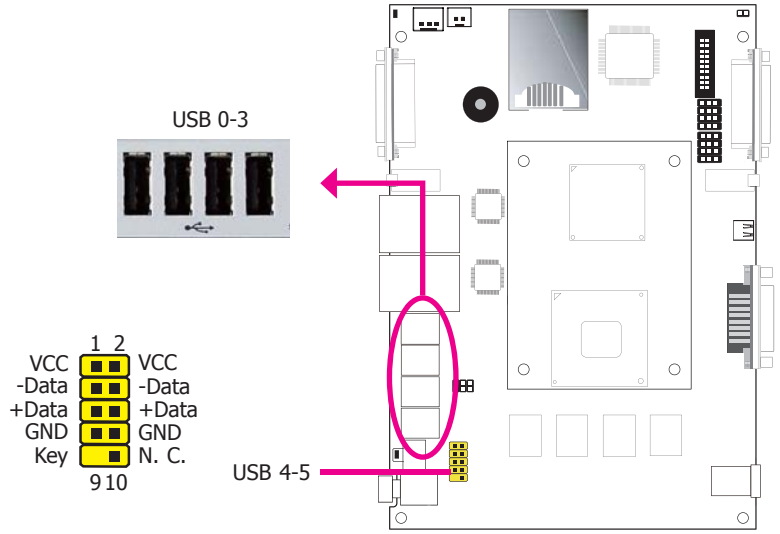
Front Panel I/O Ports



The front panel I/O port consists of the following:

- 4 USB ports
- 1 CFast socket
- 1 COM port
- 2 LAN ports
- 1 Mic-in jack

USB Ports



USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with 4 USB 2.0/1.1 ports (USB 0-3). The 10-pin connector allow you to connect 2 additional USB 2.0/1.1 ports (USB 4-5).

- **BIOS Setting**

Configure the onboard USB in the Advanced menu ("USB Configuration" submenu) of the BIOS. Refer to chapter 7 for more information.

- **Driver Installation**

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.

Wake-On-USB Keyboard / Mouse

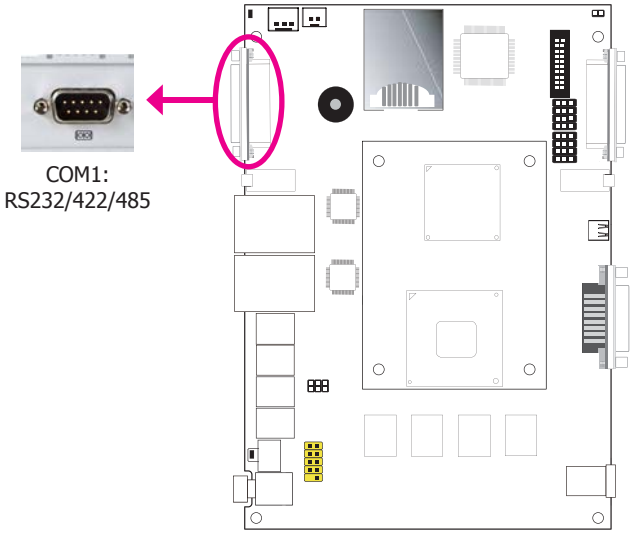
The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state. To use this function:

- **Jumper Setting**

JP8 must be set to "4-6 On: +5V_standby". Refer to "USB Power Select" in this chapter for more information.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the +5V_standby power source of your power supply must support ≥2A.

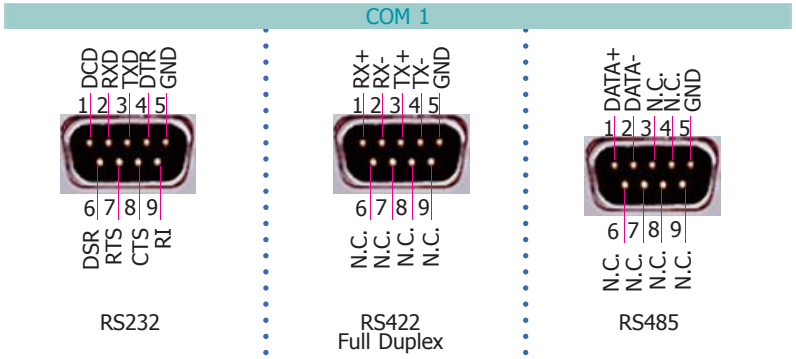
COM1 (Serial) Port



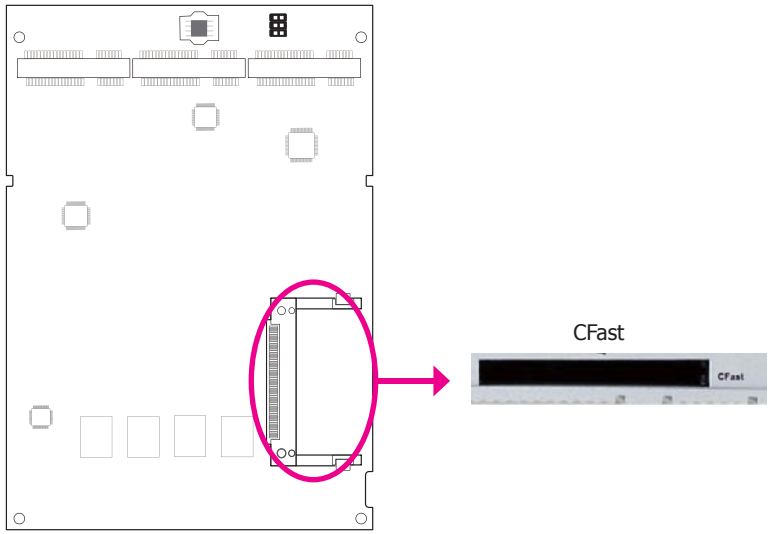
The serial ports are asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

- **BIOS Setting**

Configure the serial ports in the Integrated Peripherals submenu ("Onboard I/O Chip Setup" section) of the BIOS. Refer to chapter 7 for more information.

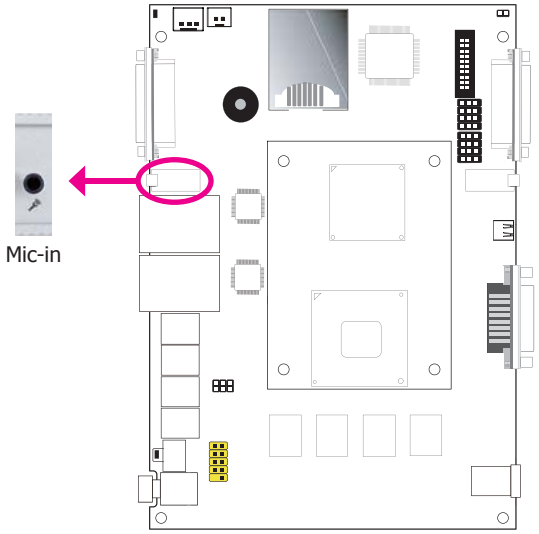


CFast Socket



The CFast socket is used for inserting a CFast card. A CFast card is a small removable mass storage device designed with flash technology - a non-volatile storage solution that does not require a battery to retain data indefinitely.

Mic-in jack



This jack is used to connect an external microphone.

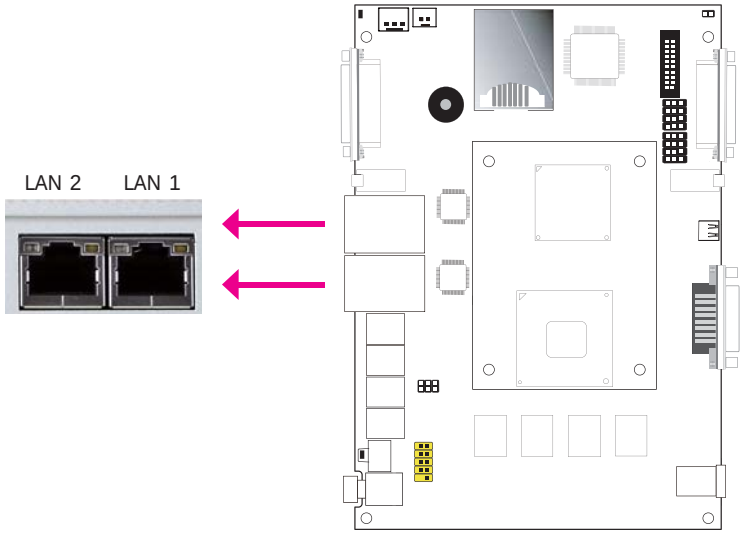
BIOS Setting

Configure the onboard audio in the Chipset menu ("South Bridge" submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

Install the audio driver. Refer to chapter 8 for more information.

RJ45 LAN Ports



Features

- Intel® WG82574L PCI Express Gigabit Ethernet controller

The LAN ports allow the system board to connect to a local area network by means of a network hub.

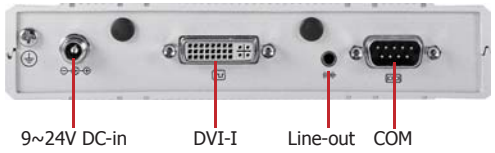
BIOS Setting

Configure the onboard LAN in the Chipset menu (“South Bridge Configuration” submenu) of the BIOS. Refer to chapter 7 for more information.

Driver Installation

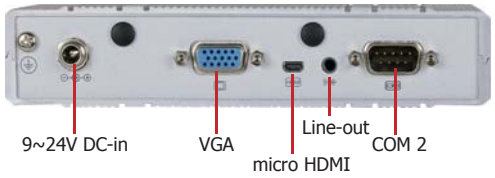
Install the LAN drivers. Refer to chapter 8 for more information.

Rear Panel I/O Ports



The rear panel I/O ports consist of the following:

- 1 DVI port
- 1 DC-in
- 1 RS232/422/485 COM port or Isolated 4-bit DIO
- 1 Line-out jack



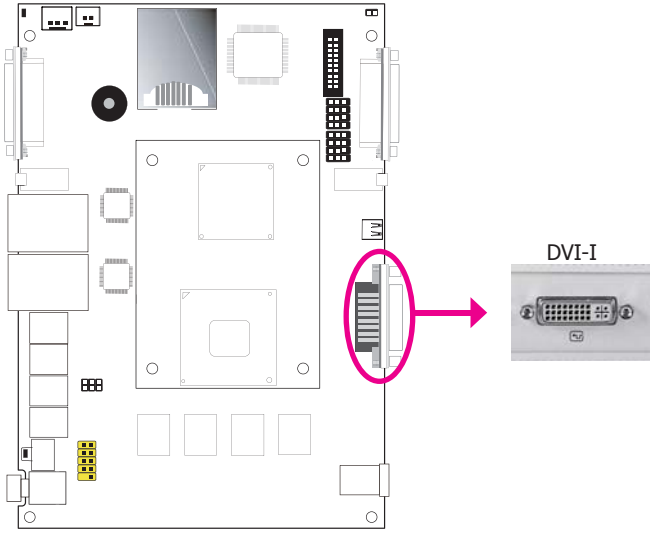
The rear panel I/O ports consist of the following:

- 1 micro HDMI port
- 1 VGA port
- 1 DC-in
- 1 RS232/422/485 COM port
- 1 Line-out jack

Rear I/O Ports	EC800-CD2040-2x2	EC800-CD1440-2x2	EC800-CDT2041-2x2	EC800-CD2041-252
DC-in power jack	1	1	1	1
Wi-Fi/3G antenna hole	2	2	2	2
Line-out	1	1	1	1
DVI	1	1	0	0
VGA:DB-15 D-sub	0	0	1	1
micro HDMI	0	0	1	1
COM/DIO	2	1*	2	2
DIO: DB-9 (signal+power)	0	1*	0	0

* Jumper selectable

DVI-I Port



The DVI-I port is used to connect an LCD monitor.
Connect the display device's cable connector to the DVI-I port. After you plug the cable connector into the port, gently tighten the cable screws to hold the connector in place.

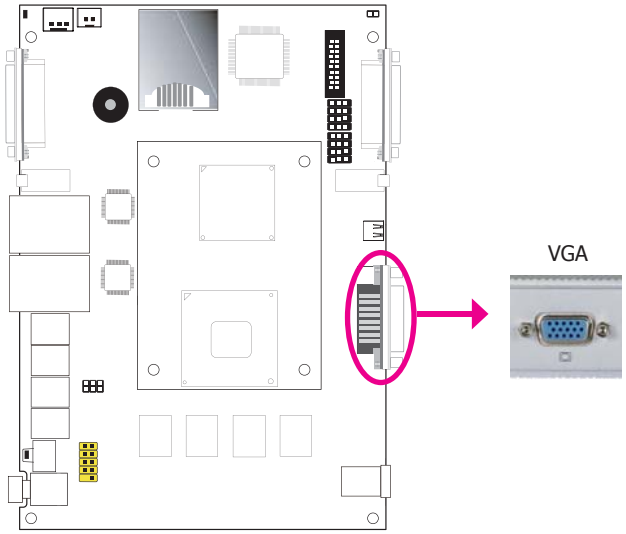
BIOS Setting

Configure the display device in the Chipset menu ("North Bridge Configuration" submenu) of the BIOS. Refer to chapter 7 for more information.

Driver Installation

Install the graphics driver. Refer to chapter 4 for more information.

VGA Port



The VGA port is used for connecting a VGA monitor. Connect the monitor's 15-pin D-shell cable connector to the VGA port. After you plug the monitor's cable connector into the VGA port, gently tighten the cable screws to hold the connector in place.

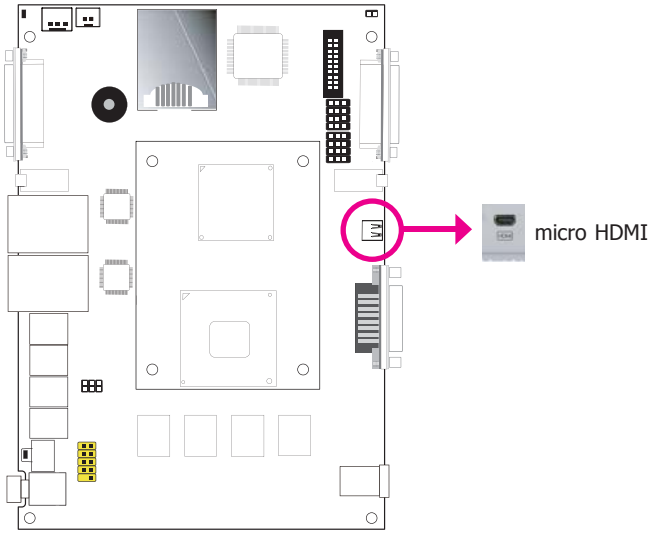
BIOS Setting

Configure VGA in the Chipset menu ("North Bridge Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

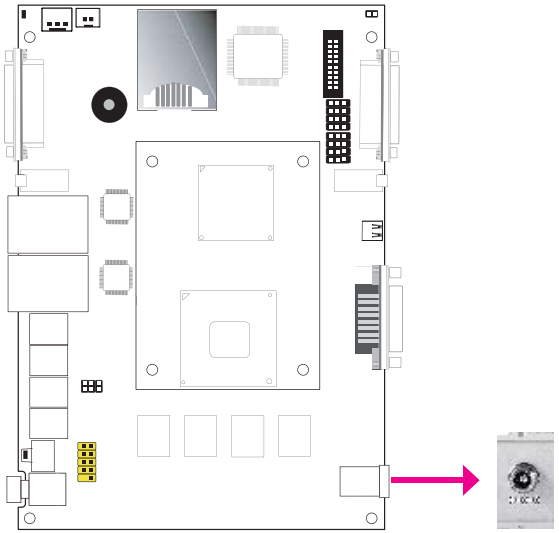
Install the graphics driver. Refer to chapter 4 for more information.

micro HDMI Port



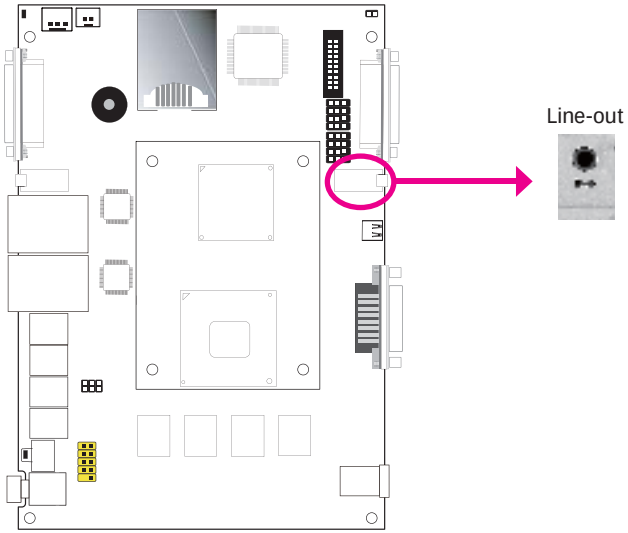
The HDMI port which carries both digital audio and video signals is used to connect a LCD monitor or digital TV that has the HDMI port.

DC-in



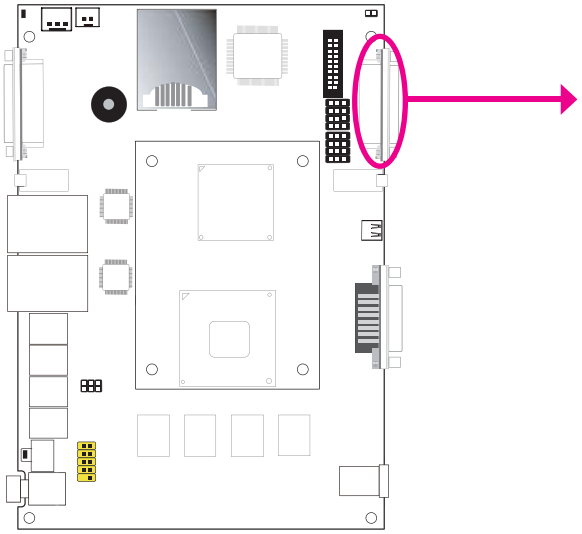
This jack provides maximum of 60W power and is considered a low power solution. Connect a DC power cord to this jack. Use a power adapter within 9~24V DC output voltage. Using a voltage range out of 9~24V may fail to boot the system or cause damage to the system board.

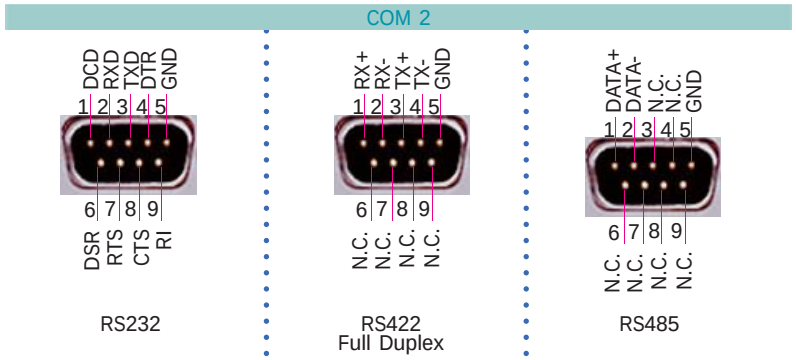
Line-out jack



This jack is used to connect a headphone or external speakers.

COM2 (Serial) Port/ Isolated 4-bit DIO





This DB-9 port can be used as an RS232/422/485 COM port or as an isolated 4-bit DIO. Refer to the jumper setting in this section for its respective configuration.

COM2 (Serial) Port

The serial port is an asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

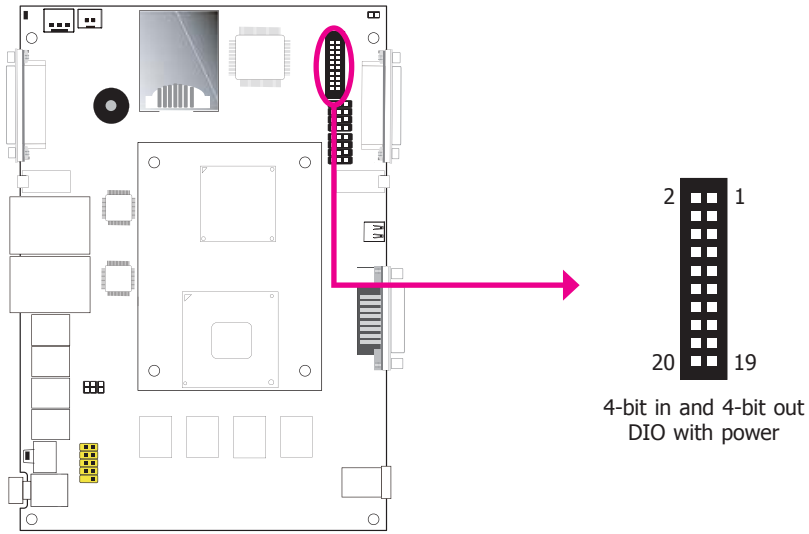
Isolated 4-bit DIO (2-bit in and 2-bit out)

The isolated 4-bit Digital I/O connector provides powering-on function to external devices that are connected to these connectors.

Pins	COM2 Function			DIO Function
	RS232	RS422	RS485	
1	DCD	RX+	DATA+	DIN0A
2	RX	RX-	DATA-	DIN0B
3	TX	TX+	NC	DIN1A
4	DTR	TX-	NC	DIN1B
5	GND	GND	GND	GND
6	DSR	NC	NC	DOUT0A
7	RTS	NC	NC	DOUT0B
8	CTS	NC	NC	DOUT1A
9	RI	NC	NC	DOUT1B

I/O Connectors

Digital I/O Connector



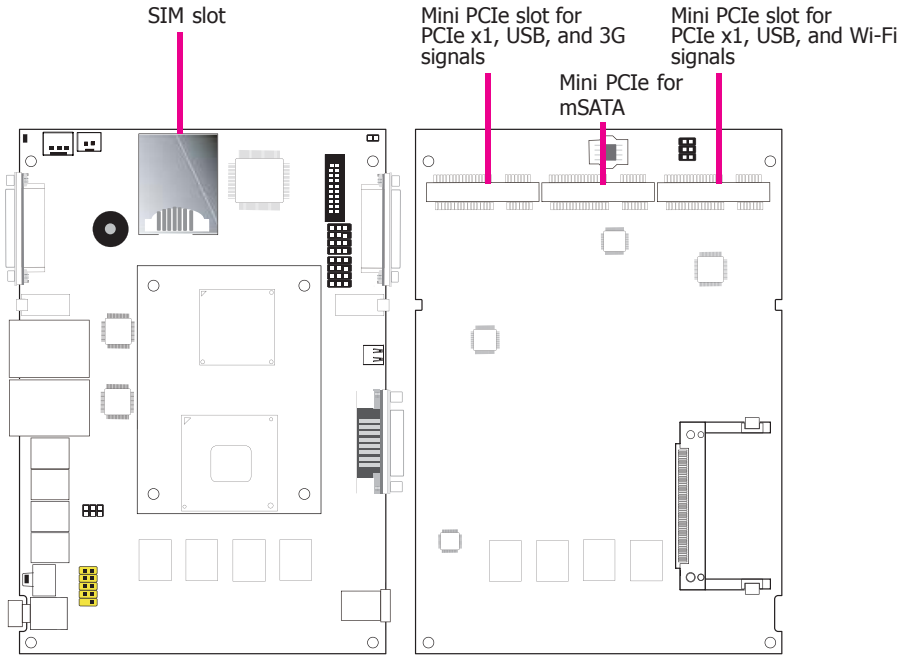
4-bit in and 4-bit out DIO with power

The 4-bit in and 4-bit out Digital I/O connector provides powering-on function to external devices that are connected to these connectors.

Digital I/O Connector

Pins	Function	Pins	Function
1	DIN0A	2	DOUT0A
3	DIN0B	4	DOUT0B
5	DIN1A	6	DOUT1A
7	DIN1B	8	DOUT1B
9	DIN2A	10	DOUT2A
11	DIN2B	12	DOUT2B
13	DIN3A	14	DOUT3A
15	DIN3B	16	DOUT3B
17	+5V	18	+5V_standby
19	GND	20	GND

Expansion Slots



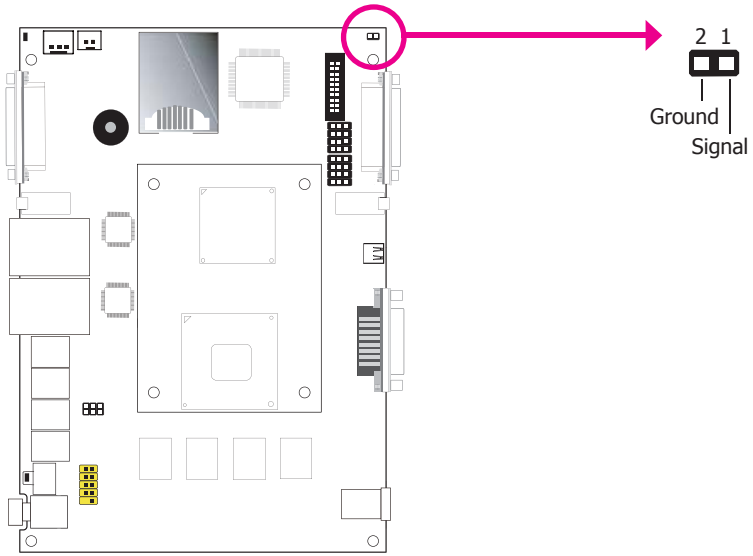
SIM Slot

The SIM slot on the system board is used to insert a SIM card.

Mini PCI Express Slot

The Mini PCI Express slot on the system board is used to install a half and/or full size Mini PCIe card such as network cards or other cards that comply to the mini PCI Express specifications into the mini PCI Express slot.

Chassis Intrusion Connector

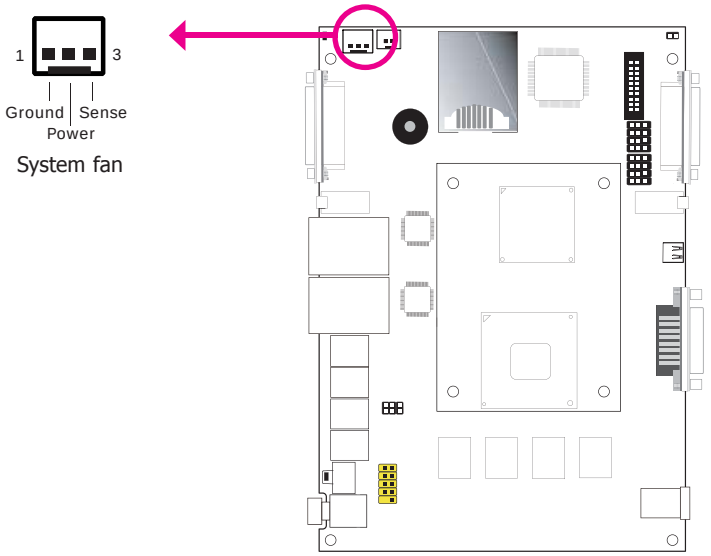


The board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to this connector. When the system's power is on and a chassis intrusion occurred, an alarm will sound. When the system's power is off and a chassis intrusion occurred, the alarm will sound only when the system restarts.

MyGuard Hardware Monitor

Install the "MyGuard Hardware Monitor" utility. By default, the chassis intrusion detection function is disabled. When enabled, a warning message will appear when the chassis is open. The utility can also be configured so that a beeping alarm will sound when the chassis is open. Refer to the "MyGuard Hardware Monitor" section in chapter 8 for more information.

Cooling Fan Connector

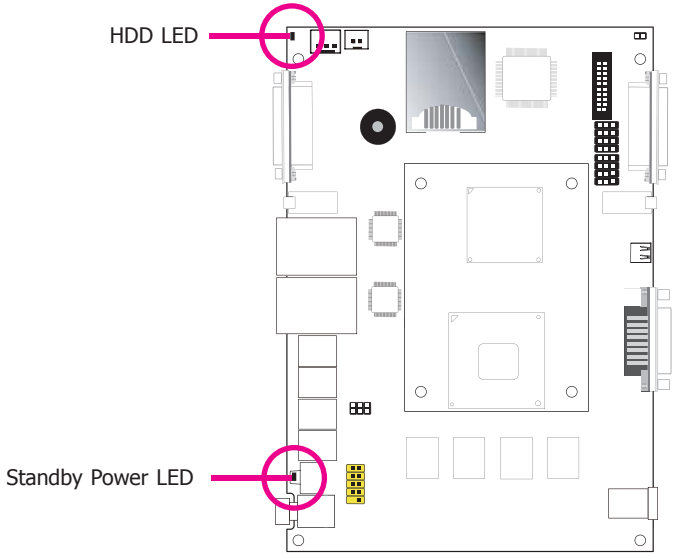


The fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

The Advanced menu ("PC Health Configuration" submenu) of the BIOS will display the current speed of the cooling fans. Refer to chapter 7 for more information.

LEDs



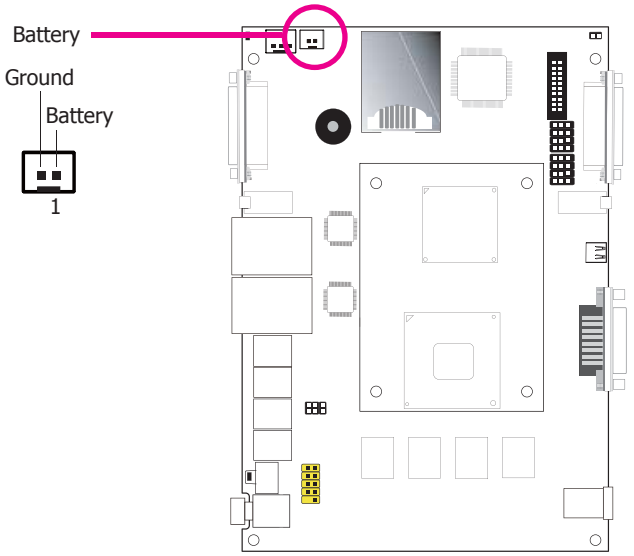
Standby Power LED

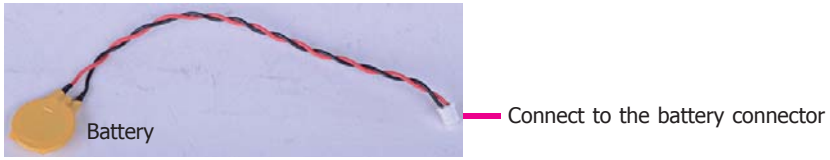
This LED will blink when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC and then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

HDD LED

The HDD LED will light when the hard drive is being accessed.

Battery





The lithium ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

Safety Measures

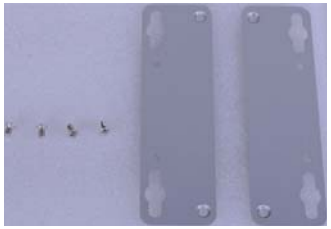
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

Chapter 6 - Mounting Options

Wall Mount

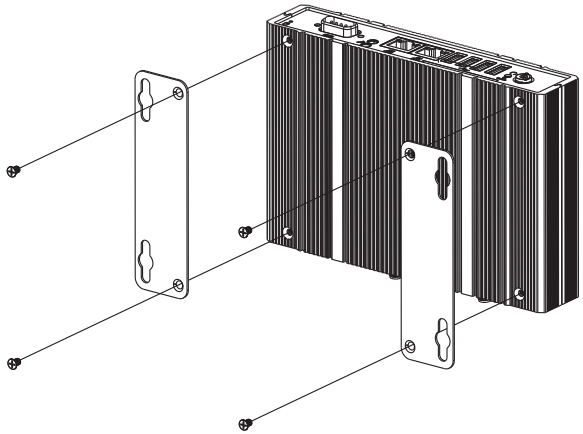
The wall mount kit includes the following:

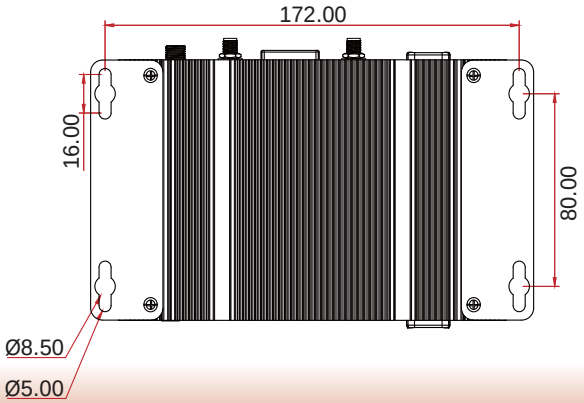
- 2 Wall mount brackets
- Bracket screws



1. If the mounting screw has been previously attached at the bottom of the system, please remove them first.

2. At the bottom side of the system, use the provided mounting screws to secure the wallmount brackets on each side of the system.

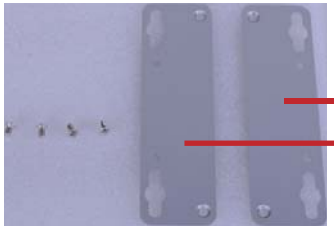




VESA Mount

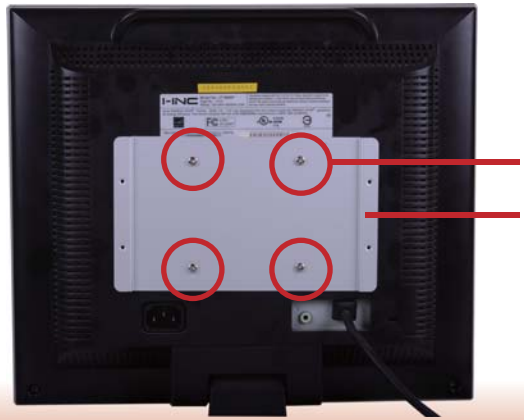
The vesa mount kit includes the following:

- 1 VESA mount bracket A
- 2 VESA mount bracket B
- Bracket screws

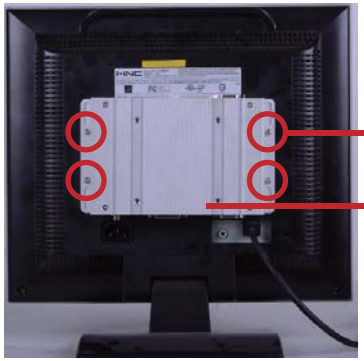


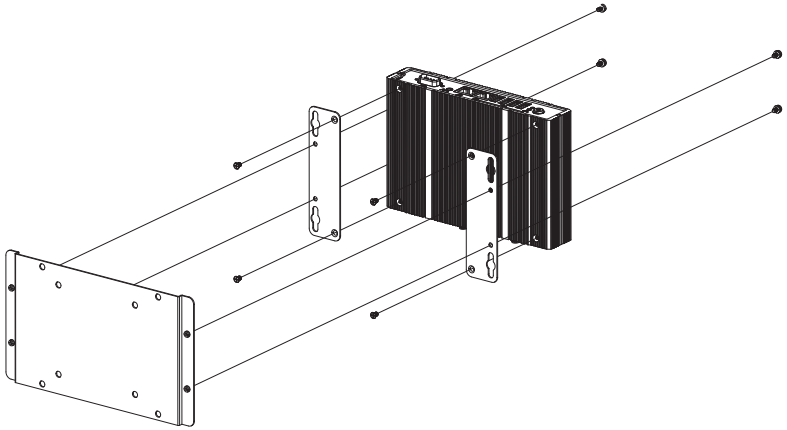
1. Prior to installing the VESA mount bracket A, make sure you have already installed the VESA mount bracket B.

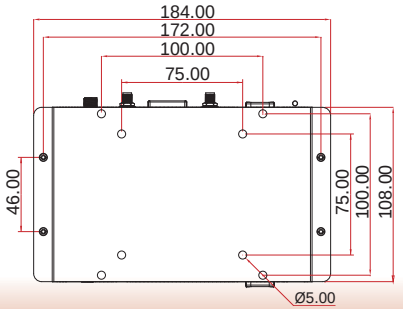
2. Used the provided mounting screws to secure the VESA bracket A in place.



3. Align the VESA bracket A to the VESA bracket B and then use the provided mounting screws to secure the system in place.







DIN Rail Mount

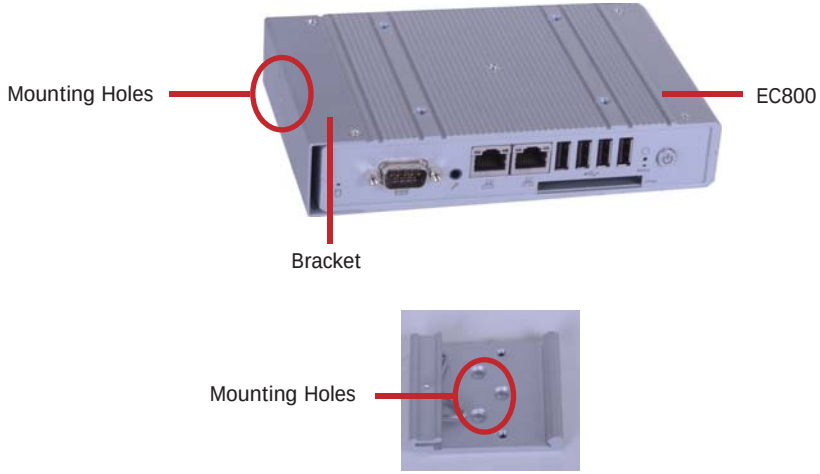
The DIN Rail mount kit includes the following:

- 1 DIN Rail mount bracket
- 1 bracket
- Bracket screws

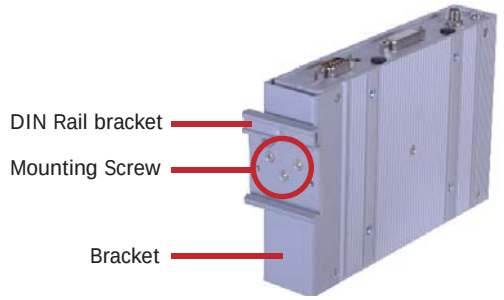
1. Turn the system to the bottom side (labeled side) and top side and locate the mounting screw. Remove these screws and then put them in a safe place for later use.

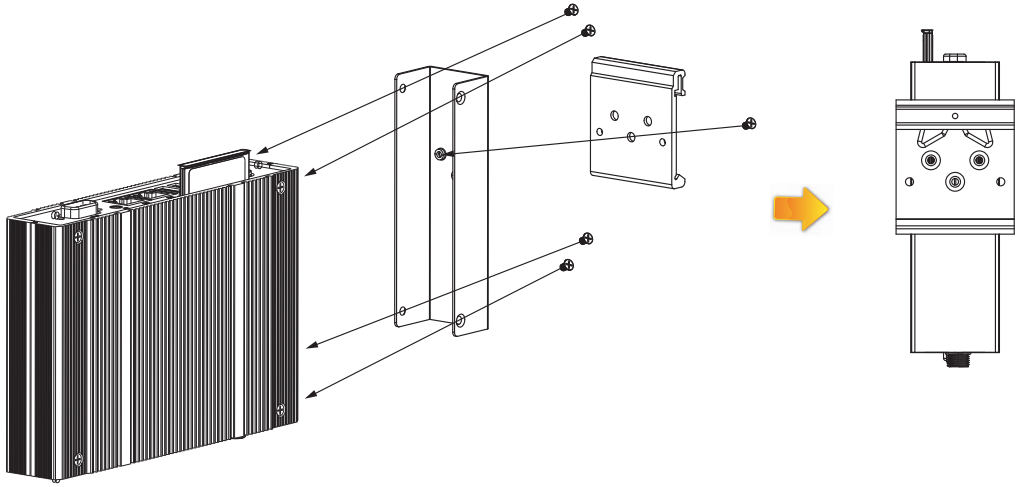
2. Align the mounting holes of the system and the mounting holes on the bracket, and then use the screws removed on step 1 to secure the bracket in place.

3. The 3 mounting holes on the bracket of the system is used to mount the DIN rail bracket.



4. Align the mounting holes of the bracket in the system and the mounting holes on the DIN rail bracket, and then use the provided mounting screws to secure the bracket in place.





Chapter 7 - BIOS Setup

Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.

Note:
The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message “Press DEL to run setup” will appear on the screen. If the message disappears before you respond, restart the system or press the “Reset” button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the hightlight up or down between submenu or fields.
<Esc>	Exit to the BIOS Setup Utility.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
Tab	Select a field.
<F1>	Displays General Help
<F2>	Previous Values
<F3>	Optimized Defaults
<F4>	Saves and exits the Setup program.
<Enter>	Press <Enter> to enter the highlighted submenu.

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

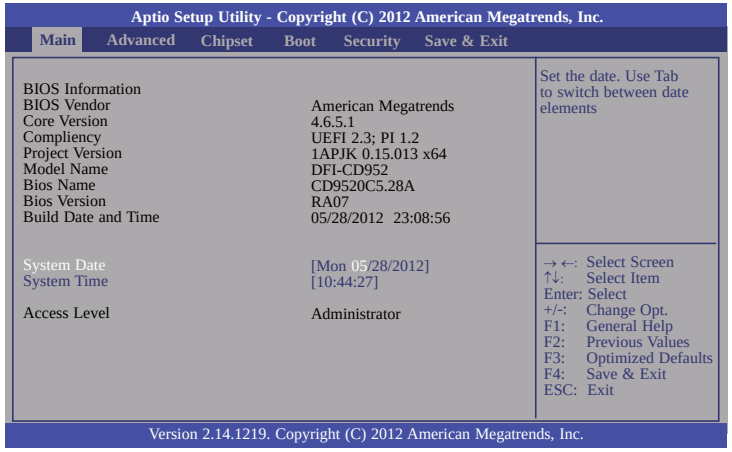
Submenu

When “▶“ appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

AMI BIOS Setup Utility

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.1
Compliency UEFI 2.3; PI 1.2
Project Version 1APJK 0.15.013 x64
Model Name DFI-CD952
Bios Name CD9520C5.28A
Bios Version RA07
Build Date and Time 05/28/2012 23:08:56
System Date [Mon 05/28/2012]
System Time [10:44:27]
Access Level Administrator
Set the date. Use Tab to switch between date elements
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1980 to 2099.

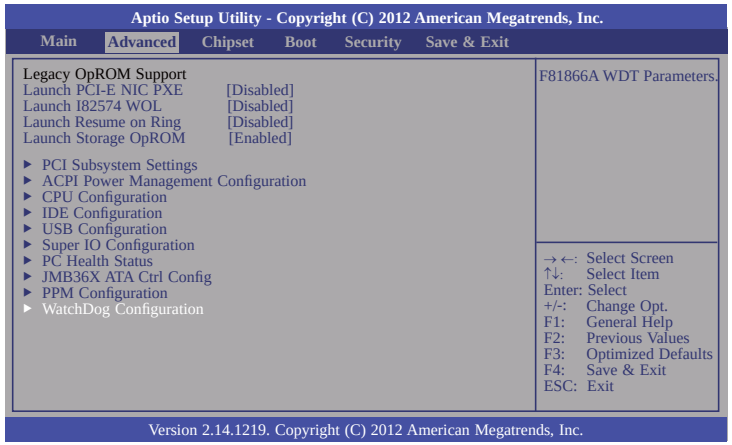
System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Important:
Setting incorrect field values may cause the system to malfunction.



Legacy PCI-E NIC PXE

Enable or Disable Boot option for Realtek 8111DL NIC.

Launch I82574 WOL

Enable or Disable WOL for Intel 82574 LAN Option.

Launch Resume on Ring

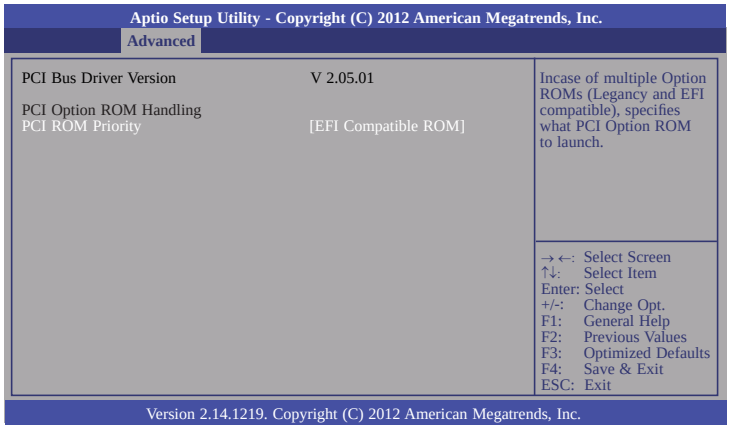
Enable or Disable resume on ring option.

Launch Storage OpROM

Enable or Disable Boot Option for Legacy Mass Storage Devices with Option ROM.

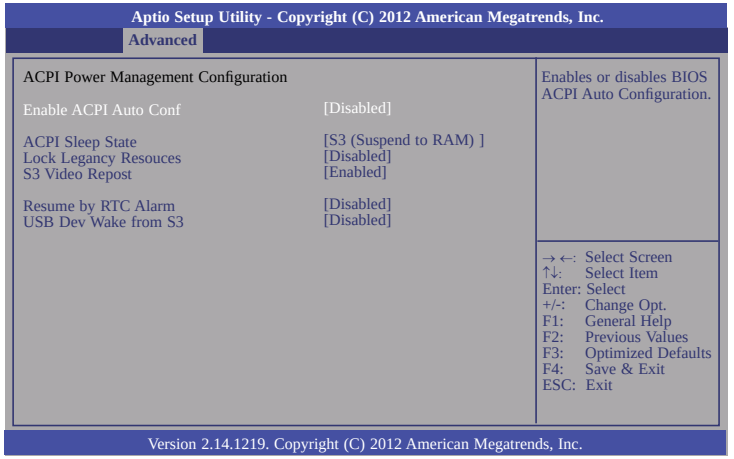
PCI Subsystem Settings

This section is used to configure the PCI Subsystem.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
PCI Bus Driver Version
V 2.05.01
PCI Option ROM Handling
PCI ROM Priority
[EFI Compatible ROM]
Incase of multiple Option ROMs (Legancy and EFI compatible), specifies what PCI Option ROM to launch.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

ACPI Power Management Configuration

This section is used to configure the ACPI Setting.



Enable ACPI Auto Config

Enables or disables BIOS ACPI Auto Configuration.

ACPI Sleep State

Selects the highest ACPI sleep state the system will enter when the Suspend button is pressed.

S1(POS) Enables the Power On Suspend function.

S3(STR) Enables the Suspend to RAM function.

Lock Legacy Resources

Enables or Disables Lock Legacy Resouces.

Resume by RTC Alarm

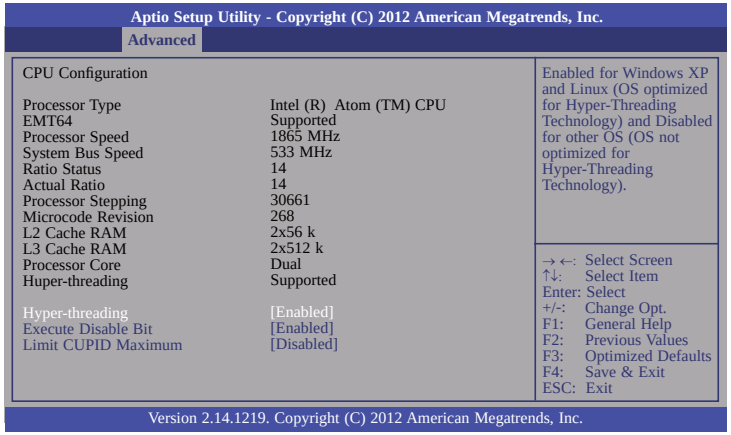
When Enabled, the system uses the RTC to generate a wakeup event.

USB Dev Wake from S3

This field, when enabled, allows you to use a USB keyboard to wake up a system that is in the S3 (STR - Suspend To RAM) state.

CPU Configuration

This section is used to configure the CPU. It will also display the detected CPU information.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
CPU Configuration
Processor Type Intel (R) Atom (TM) CPU
EMT64 Supported
Processor Speed 1865 MHz
System Bus Speed 533 MHz
Ratio Status 14
Actual Ratio 14
Processor Stepping 30661
Microcode Revision 268
L2 Cache RAM 2x56 k
L3 Cache RAM 2x512 k
Processor Core Dual
Huper-threading Supported
Hyper-threading [Enabled]
Execute Disable Bit [Enabled]
Limit CUPID Maximum [Disabled]
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
→ ←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

Hyper-threading

Enable this field for Windows XP and Linux which are optimized for Hyper-Threading technology. Select disabled for other OSes not optimized for Hyper-Threading technology. When disabled, only one thread per enabled core is enabled.

Execute Disable Bit

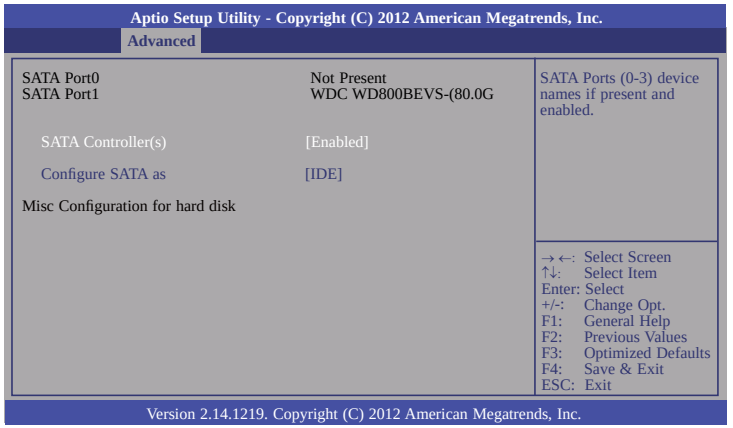
XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 update 3.)

Limit CUPID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or less than 3.

IDE Configuration

This section is used to configure IDE functions.

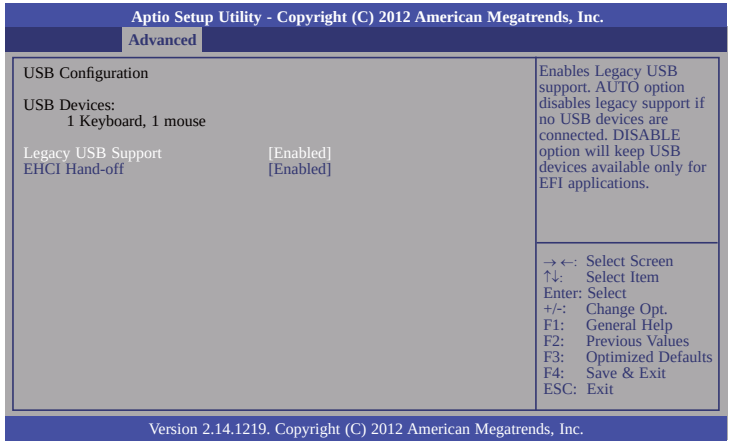

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
SATA Port0 Not Present
SATA Port1 WDC WD800BEVS-(80.0G
SATA Controller(s) [Enabled]
Configure SATA as [IDE]
Misc Configuration for hard disk
SATA Ports (0-3) device names if present and enabled.
→ ←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

Configure SATA as

Select a configuration for SATA controller.

USB Configuration

This section is used to configure USB.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
1 Keyboard, 1 mouse
Legacy USB Support [Enabled]
EHCI Hand-off [Enabled]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

Legacy USB Support

Enabled
Enables legacy USB.

Auto
Disables support for legacy when no USB devices are connected.

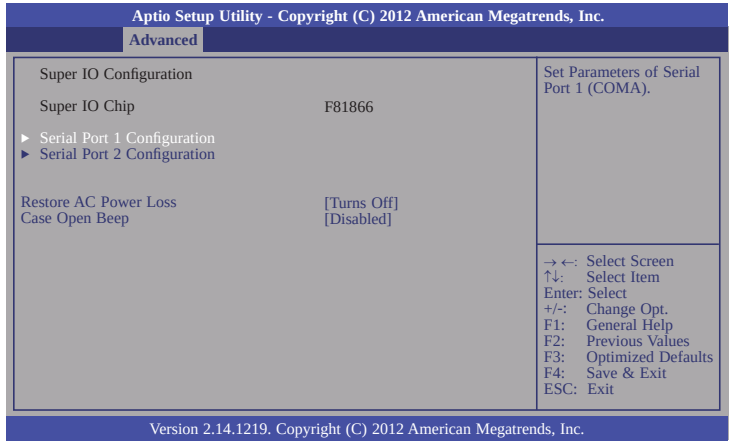
Disabled
Keeps USB devices available only for EFI applications.

EHCI Hand-off

This is a workaround for OSes that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.

Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
Super IO Configuration
Super IO Chip F81866
▶ Serial Port 1 Configuration
▶ Serial Port 2 Configuration
Restore AC Power Loss [Turns Off]
Case Open Beep [Disabled]
Set Parameters of Serial Port 1 (COMA).
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

Restore AC Power Lost

Off
When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.

On

When power returns after an AC power failure, the system will automatically power-on.

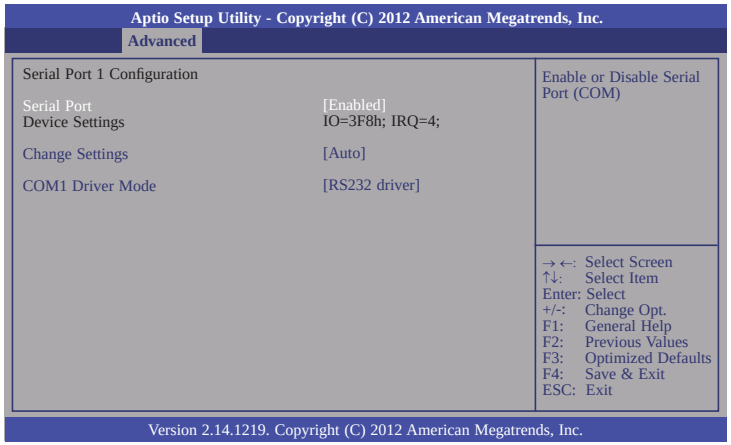
Last State

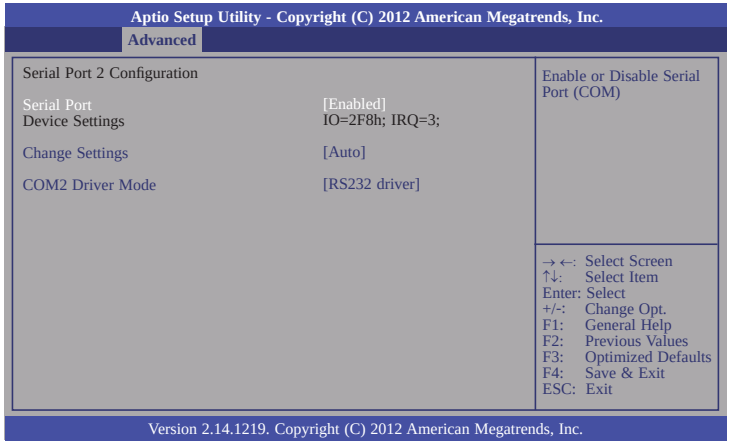
When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

Case Open Beep

Set this field to Enabled to allow the system to alert you of a chassis intrusion event.

Serial Port 1 Configuration to Serial Port 2 Configuration





Serial Port

Enables or disables the serial port.

Change Settings

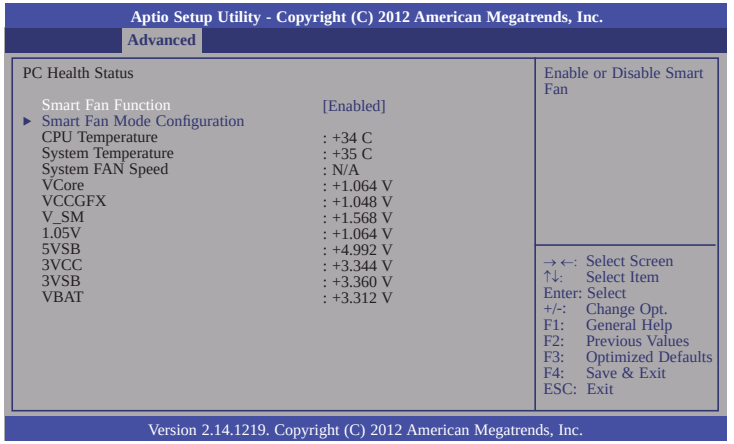
Selects the IO/IRQ setting of the I/O device.

COM1/2 Driver Mode

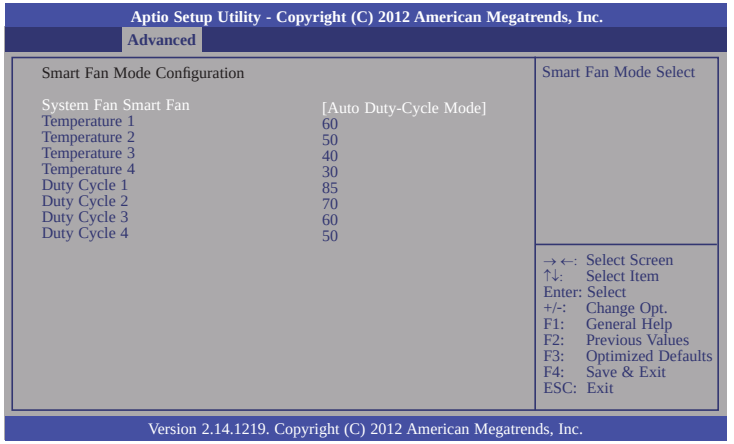
Enable or disable serial port (COM)

PC Health Status

This section displays the hardware health monitor.

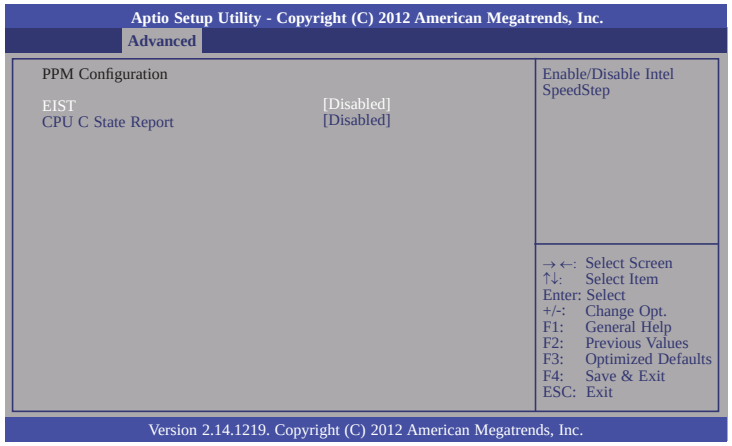

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
PC Health Status
Smart Fan Function [Enabled]
▸ Smart Fan Mode Configuration
CPU Temperature : +34 C
System Temperature : +35 C
System FAN Speed : N/A
VCore : +1.064 V
VCCGFX : +1.048 V
V_SM : +1.568 V
1.05V : +1.064 V
5VSB : +4.992 V
3VCC : +3.344 V
3VSB : +3.360 V
VBAT : +3.312 V
Enable or Disable Smart Fan
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

Smart Fan Mode Configuration



PPM Configuration

This section is used to configure the PPM functions.

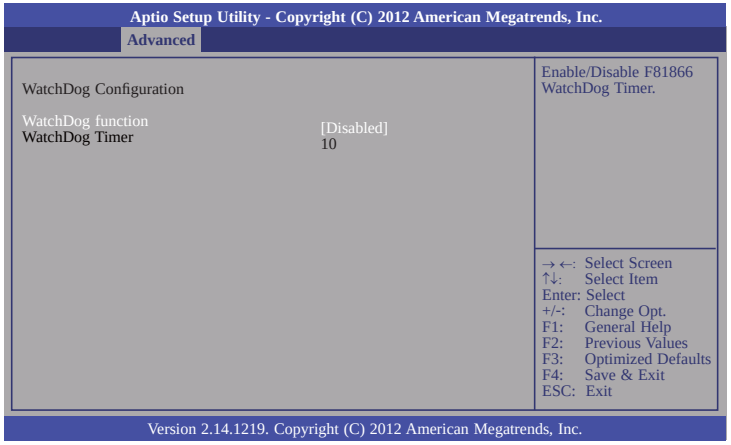


CPU C State Report

Enable/Disable CPU C Status Report to OS.

WatchDog Configuration

This section is used to configure the watchdog functions.

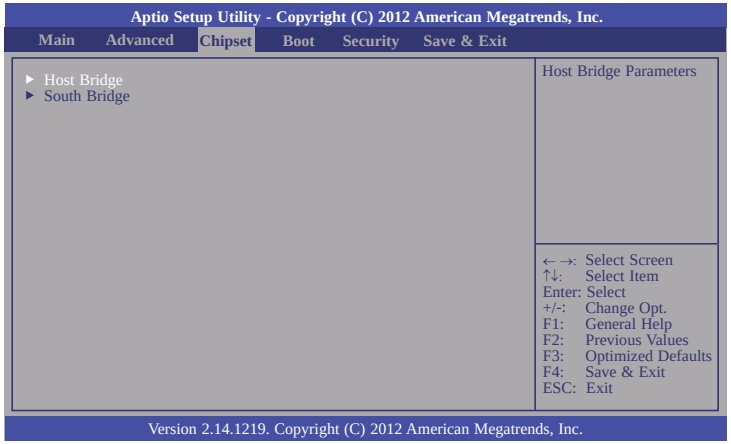


WatchDog function

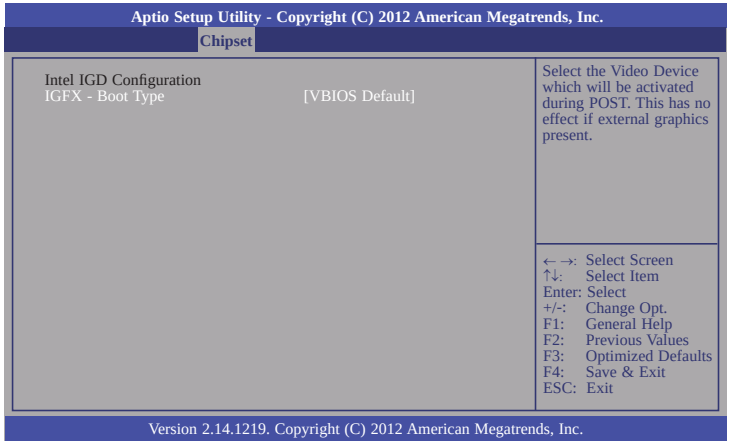
This field is used to enable or disable the Watchdog timer function.

Chipset

Configures relevant chipset functions.



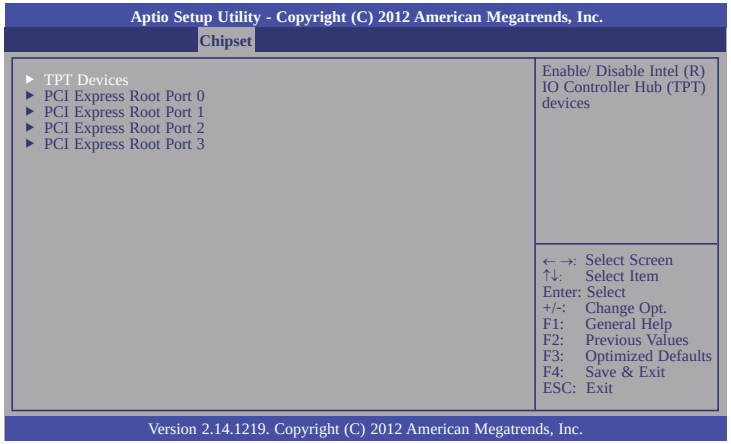
Host Bridge


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Chipset
Intel IGD Configuration
IGFX - Boot Type
[VBIOS Default]
Select the Video Device which will be activated during POST. This has no effect if external graphics present.
←→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

IGFX - Boot Type

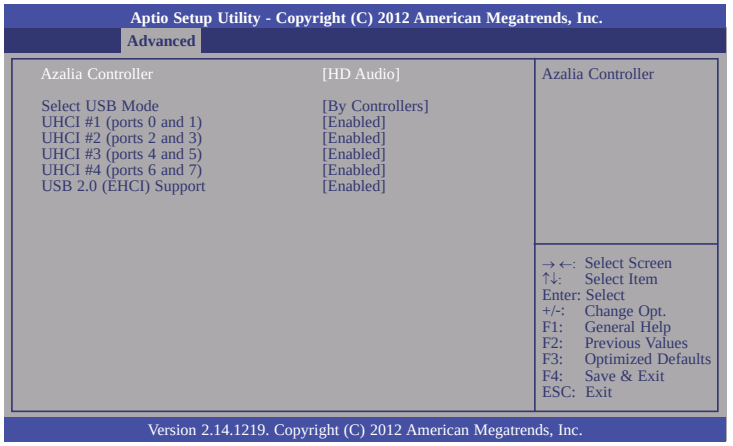
Select the Video Device which will be activated during POST. This has no effect if external graphics present.

South Bridge


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Chipset
TPT Devices
PCI Express Root Port 0
PCI Express Root Port 1
PCI Express Root Port 2
PCI Express Root Port 3
Enable/ Disable Intel (R) IO Controller Hub (TPT) devices
←→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

TPT Devices

Enable or disable Intel IO Controller Hub (TPT) devices.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
Azalia Controller [HD Audio]
Select USB Mode [By Controllers]
UHCI #1 (ports 0 and 1) [Enabled]
UHCI #2 (ports 2 and 3) [Enabled]
UHCI #3 (ports 4 and 5) [Enabled]
UHCI #4 (ports 6 and 7) [Enabled]
USB 2.0 (EHCI) Support [Enabled]
Azalia Controller
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

Select USB Mode

This field is used to select the USB's operation mode.

High Speed

If the USB device is a high speed device, it will operate in high speed mode. If it is a full/low speed device, it will operate in full/low speed mode.

Full/Low Speed

Regardless of the speed of the USB device, it will always operate in full/low speed mode.

UHCI 1~4

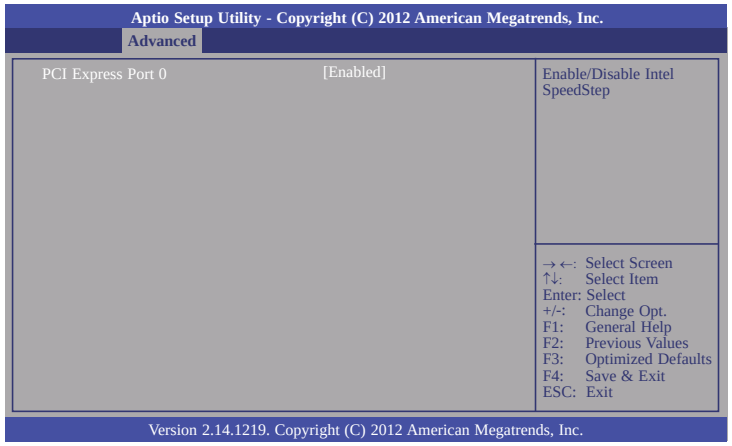
Control the USB UHCI (USB 1.1) function.

USB 2.0 (EHCI) Support

Enable or disable USB 2.0 (EHCI) support.

PCI Express Root Port 0~3

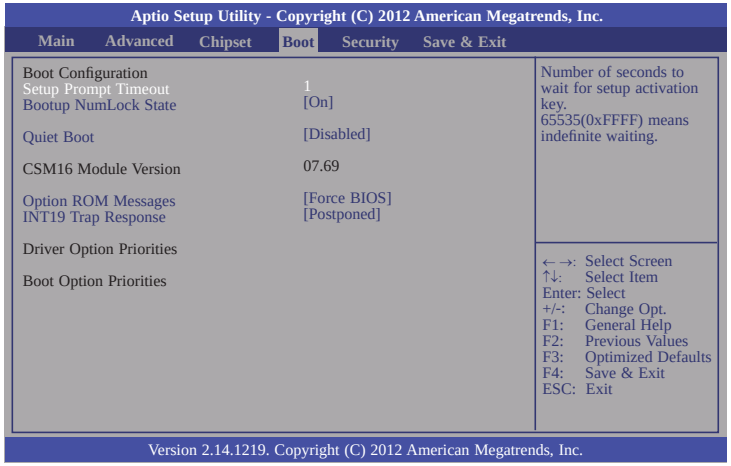
This section is used to configure the PCI Express Root functions.



PCI Express Port 0~3

Enable/Disable PCI Express Root Port 0~3.

Boot


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Quiet Boot [Disabled]
CSM16 Module Version 07.69
Option ROM Messages [Force BIOS]
INT19 Trap Response [Postponed]
Driver Option Priorities
Boot Option Priorities
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
←→: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Quiet Boot

Enables or disables the quiet boot function.

Option ROM Messages

Set display mode for option ROM.

INT19 Trap Response

BIOS reaction on Int19 trapping by option ROM.

Immediate

Execute the trap right away.

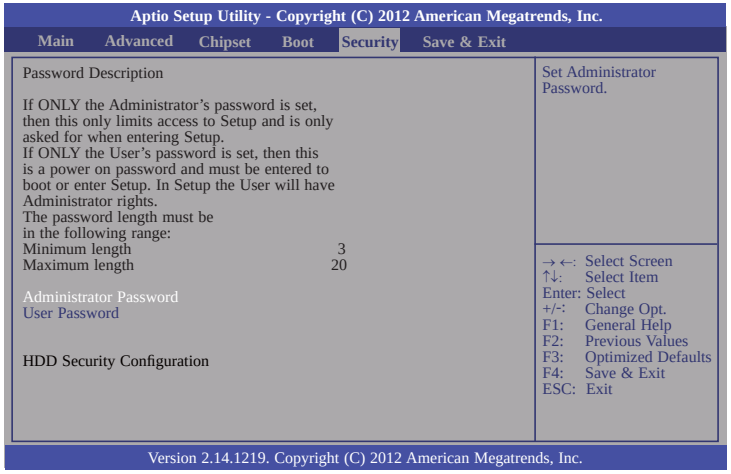
Postponed

Execute the trap during legacy boot.

Hard Driver BBS Priorities

Set the order of the legacy devices in this group.

Security


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
HDD Security Configuration
Set Administrator Password.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

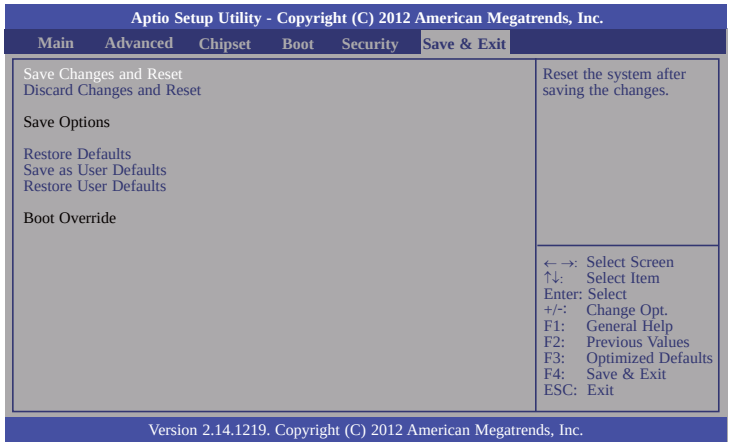
Administrator Password

Sets the administrator password.

User Password

Sets the user password.

Save & Exit


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Save Changes and Reset
Discard Changes and Reset
Save Options
Restore Defaults
Save as User Defaults
Restore User Defaults
Boot Override
Reset the system after saving the changes.
← →: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2012 American Megatrends, Inc.

Save Changes and Reset

To save the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system after saving all changes made.

Discard Changes and Reset

To discard the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system setup without saving any changes.

Restore Defaults

To restore and load the optimized default values, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore the default values of all the setup options.

Save as User Defaults

To save changes done so far as user default, select this field and then press <Enter>. A dialog box will appear. Select Yes to save values as user default.

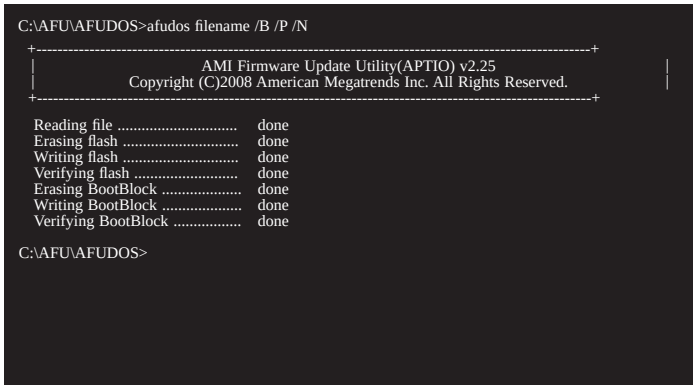
Restore User Defaults

To restore user default to all the setup options, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore user default.

Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AFUDOS.EXE. Please contact technical support or your sales representative for the files.

To execute the utility, type:
A:> AFUDOS BIOS_File_Name /b /p /n
then press <Enter>.


C:\AFU\AFUDOS>afudos filename /B /P /N
AMI Firmware Update Utility(APTIO) v2.25
Copyright (C)2008 American Megatrends Inc. All Rights Reserved.
Reading file ..... done
Erasing flash ..... done
Writing flash ..... done
Verifying flash ..... done
Erasing BootBlock ..... done
Writing BootBlock ..... done
Verifying BootBlock ..... done
C:\AFU\AFUDOS>

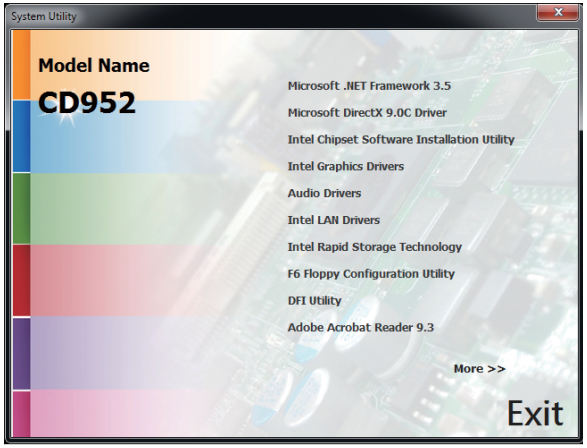
After finishing BIOS update, please turn off the AC power. Wait about 10 seconds and then turn on the AC power again.

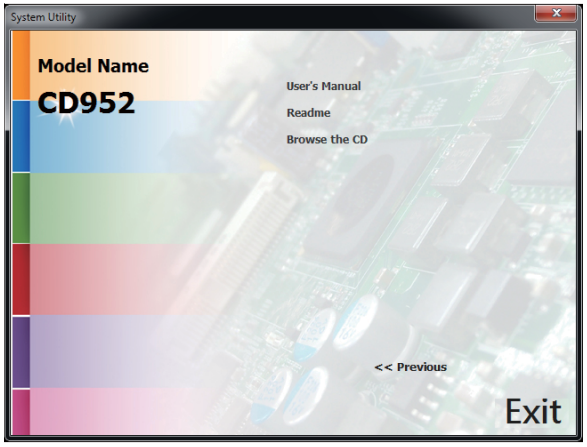
Chapter 8 - Supported Software

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

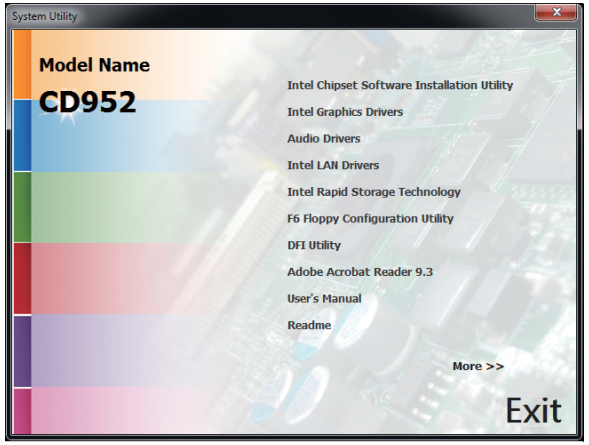
Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, “Autorun” did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click “Setup”.

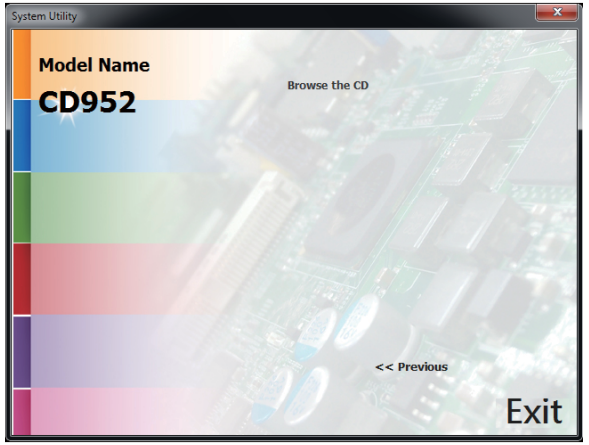
Auto Run Page (For Windows XP)





Auto Run Page (For Windows 7)





Microsoft .NET Framework 3.5 (For Windows XP only)

Note:
Before installing Microsoft .NET Framework 3.5, make sure you have updated your Windows XP operating system to Service Pack 3.

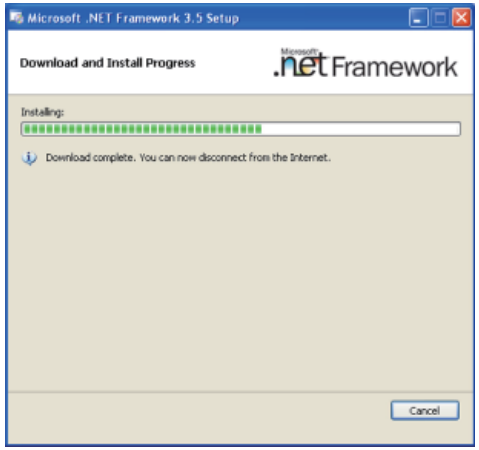
To install the driver, click “Microsoft .NET Framework 3.5” on the main menu.

1. Read the license agreement carefully.

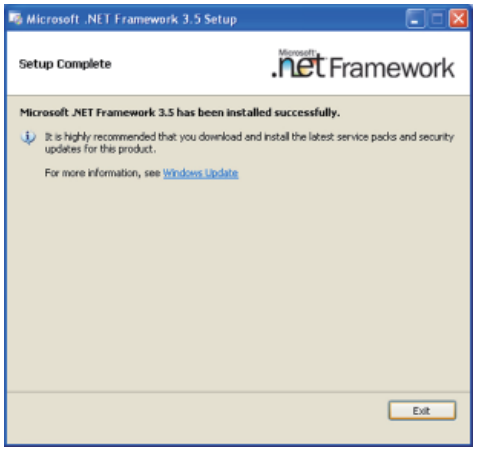
   Click “I have read and accept the terms of the License Agree ment” then click Install.

Microsoft .NET Framework 3.5 Setup
Welcome to Setup
.net Framework
Be sure to carefully read and understand all the rights and restrictions described in the license terms. You must accept the license terms before you can install the software.
MICROSOFT SOFTWARE SUPPLEMENTAL LICENSE TERMS
Press the Page Down key to see more text.
Print
I have read and ACCEPT the terms of the License Agreement
I DO NOT ACCEPT the terms of the License Agreement
Send information about my setup experiences to Microsoft Corporation.
Details regarding the data collection policy
Download File Size: 60 MB
Download Time Estimate: 2 hr 27 min (56 kbps)
16 min (512 kbps)
Install >
Cancel

2. Setup is now installing the driver.



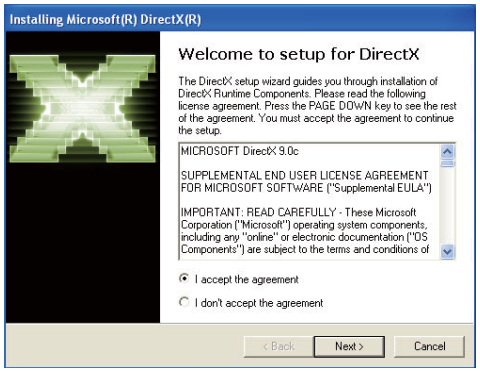
3. Click Exit.


Microsoft .NET Framework 3.5 Setup
Setup Complete
.net Framework
Microsoft .NET Framework 3.5 has been installed successfully.
It is highly recommended that you download and install the latest service packs and security updates for this product.
For more information, see Windows Update
Exit

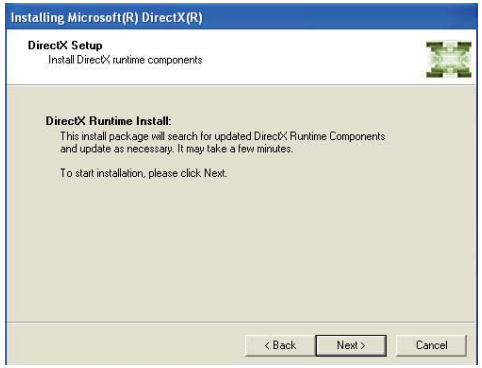
Microsoft DirectX 9.0C (For Windows XP only)

To install the utility, click “Microsoft DirectX 9.0C Driver” on the main menu.

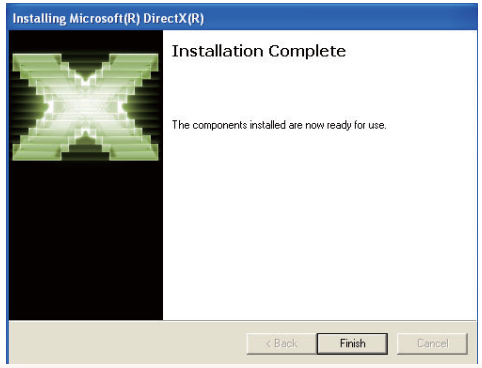
1. Click “I accept the agreement” then click Next.


Installing Microsoft(R) DirectX(R)
Welcome to setup for DirectX
The DirectX setup wizard guides you through installation of DirectX Runtime Components. Please read the following license agreement. Press the PAGE DOWN key to see the rest of the agreement. You must accept the agreement to continue the setup.
MICROSOFT DirectX 9.0c
SUPPLEMENTAL END USER LICENSE AGREEMENT FOR MICROSOFT SOFTWARE ("Supplemental EULA")
IMPORTANT: READ CAREFULLY - These Microsoft Corporation ("Microsoft") operating system components, including any "online" or electronic documentation ("OS Components") are subject to the terms and conditions of
I accept the agreement
I don't accept the agreement
< Back
Next >
Cancel

2. To start installation, click Next.


Installing Microsoft(R) DirectX(R)
DirectX Setup
Install DirectX runtime components
DirectX Runtime Install:
This install package will search for updated DirectX Runtime Components and update as necessary. It may take a few minutes.
To start installation, please click Next.
< Back
Next >
Cancel

3. Click Finish. Reboot the system for DirectX to take effect.



Intel Chipset Software Installation Utility (For Windows XP)

The Intel Chipset Software Installation Utility is used for updating Windows® INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click “Intel Chipset Software Installation Utility” on the main menu.

1. Setup is now ready to install the utility. Click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all Windows* programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

2. Read the license agreement then click Yes.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

3. Go through the readme document for system requirements and installation tips then click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 8.2.0.1012
* Target Chipset#: 965M
* Date: December 28 2006
< Back
Next >
Cancel
Intel® Installation Framework

4. Setup is now installing the driver. Click Next to continue.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
Version: 8.2.0.1008
Installing Driver: Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
Version: 8.2.0.1008
Installing Driver: Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
Version: 8.2.0.1008
Installing Driver: Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
Version: 8.2.0.1008
Click Next to continue.
Next
Intel® Installation Framework

5. Click “Yes, I want to restart this computer now” then click Finish.

   Restarting the system will allow the new software installation to take effect.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

Intel Chipset Software Installation Utility (For Windows 7)

The Intel Chipset Software Installation Utility is used for updating Windows® INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click “Intel Chipset Software Installation Utility” on the main menu.

1. Setup is now ready to install the utility. Click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

2. Read the license agreement then click Yes.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

3. Go through the readme document for system requirements and installation tips then click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 9.1.1.1024
* Target Chipset#: Intel(R) 5 Series/3400 Series Chipse
* Date: November 18 2009
< Back
Next >
Cancel
Intel® Installation Framework

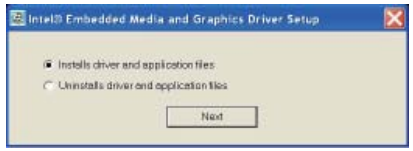
4. After completing installation, click Finish to exit setup.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
The setup program successfully installed the Intel® Chipset Device Software onto this computer.
Click Finish to complete the setup process.
Finish
Intel® Installation Framework

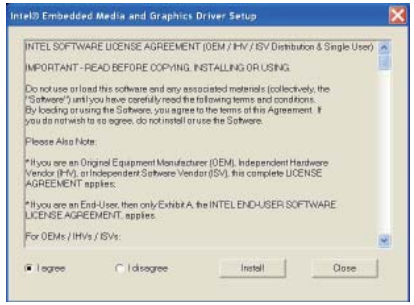
Intel Graphics Drivers (For Windows XP)

To install the driver, click “Intel Graphics Drivers” on the main menu.

1. Setup is now ready to install the graphics driver. Select “Installs driver and application files“ and click Next.


Intel® Embedded Media and Graphics Driver Setup
Installs driver and application files
Uninstalls driver and application files
Next

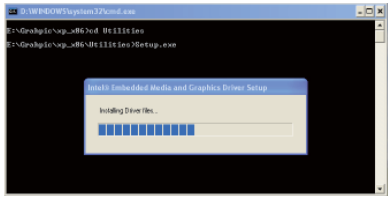
2. Read the license agreement. Then, select “I agree“ and click Install.


Intel® Embedded Media and Graphics Driver Setup
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Please Also Note:
For OEMs / IHVs / ISVs:
I agree
I disagree
Install
Close

3. Click “Continue Anyway“ to start the installation.

Hardware Installation
The software you are installing for this hardware:
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

4. Setup is now installing the driver.



5. Click “Yes” to restart this computer now.

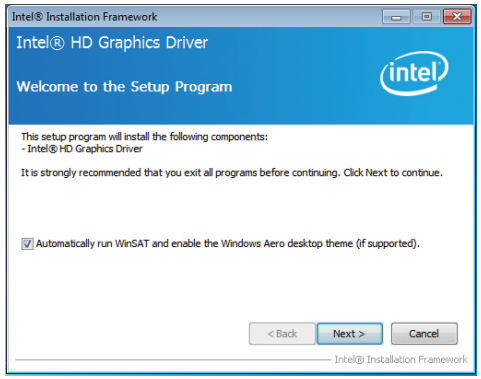
   Restarting the system will allow the new software installation to take effect.

Intel® Embedded Graphics Driver Setup
You must restart your computer to complete installation. Do you want to restart now?
Yes
No

Intel Graphics Drivers (For Windows 7)

To install the driver, click “Intel Graphics Drivers” on the main menu.

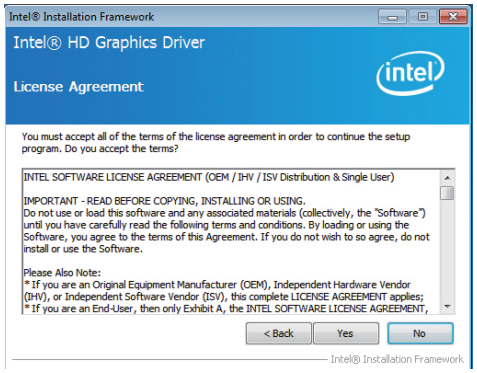
1. Setup is now ready to install the graphics driver. Click Next.


Intel® Installation Framework
Intel® HD Graphics Driver
Welcome to the Setup Program
This setup program will install the following components:
- Intel® HD Graphics Driver
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
Automatically run WinSAT and enable the Windows Aero desktop theme (if supported).
< Back
Next >
Cancel
Intel® Installation Framework

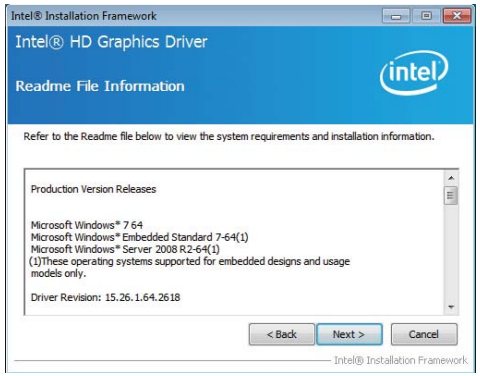
By default, the “Automatically run WinSAT and enable the Windows Aero desktop theme” is enabled. With this enabled, after installing the graphics driver and the system rebooted, the screen will turn blank for 1 to 2 minutes (while WinSAT is running) before the Windows 7/ Windows 8 desktop appears. The “blank screen” period is the time Windows is testing the graphics performance.

We recommend that you skip this process by disabling this function then click Next.

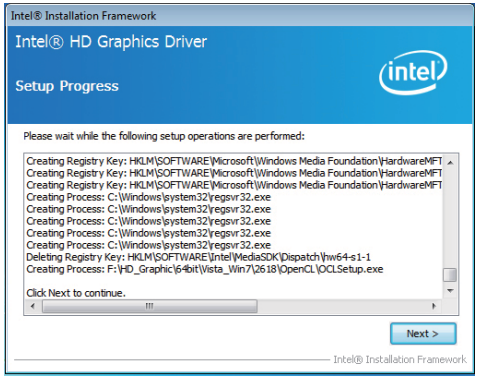
2. Read the license agreement then click Yes.


Intel® Installation Framework
Intel® HD Graphics Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

3. Go through the readme document for system requirements and installation tips then click Next.

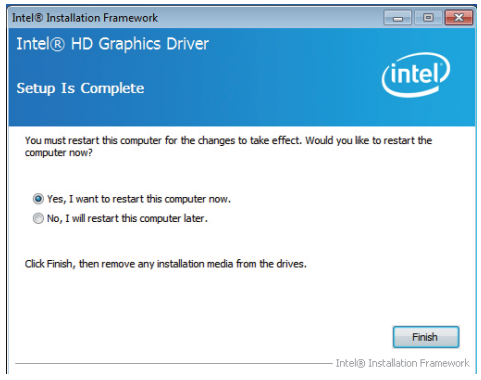

Intel® Installation Framework
Intel® HD Graphics Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Production Version Releases
Microsoft Windows* 7 64
Microsoft Windows* Embedded Standard 7-64(1)
Microsoft Windows* Server 2008 R2-64(1)
(1)These operating systems supported for embedded designs and usage models only.
Driver Revision: 15.26.1.64.2618
< Back
Next >
Cancel
Intel® Installation Framework

4. Setup is now installing the driver. Click Next to continue.



5. Click “Yes, I want to restart this computer now” then click Finish.

Restarting the system will allow the new software installation to take effect.

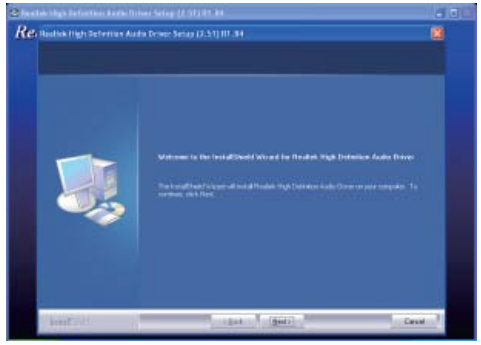

Intel® Installation Framework
Intel® HD Graphics Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

Audio Drivers (For Windows XP)

To install the driver, click “Audio Drivers” on the main menu.

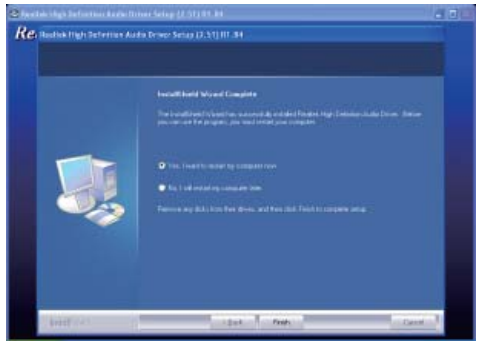
1. Setup is now ready to install the audio driver. Click Next.

2. Follow the remainder of the steps on the screen; clicking “Next” each time you finish a step.



3. Click “Yes, I want to restart my computer now” then click Finish.

   Restarting the system will allow the new software installation to take effect.



Audio Drivers (For Windows 7)

To install the driver, click “Audio Drivers” on the main menu.

1. Setup is now ready to install the driver. Click Next.

2. Follow the remainder of the steps on the screen; clicking “Next” each time you finish a step.

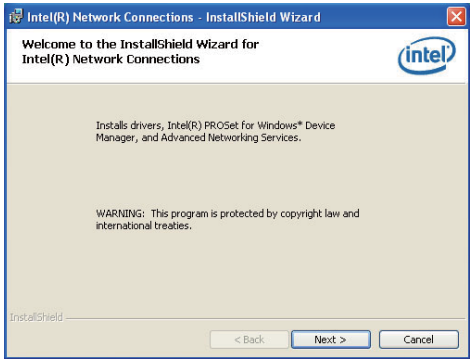
3. Click “Yes, I want to restart my computer now” then click Finish.

   Restarting the system will allow the new software installation to take effect.

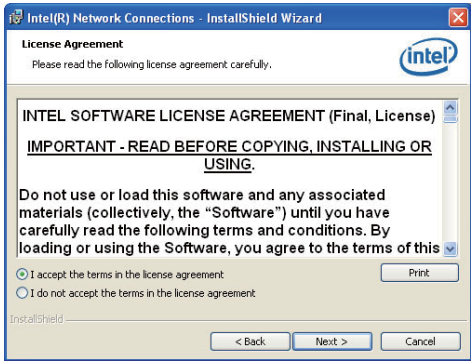
Intel LAN Drivers (For Windows XP)

To install the driver, click “Intel LAN Drivers” on the main menu.

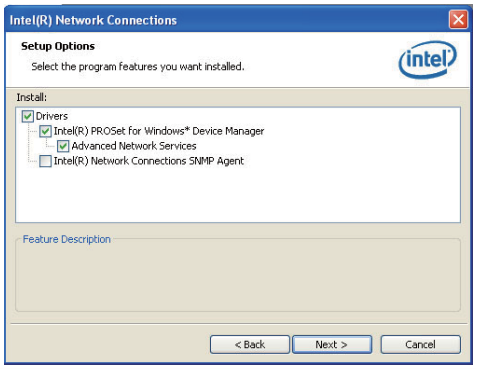
1. Setup is ready to install the driver. Click Next.


Intel(R) Network Connections - InstallShield Wizard
Welcome to the InstallShield Wizard for Intel(R) Network Connections
Installs drivers, Intel(R) PROSet for Windows* Device Manager, and Advanced Networking Services.
WARNING: This program is protected by copyright law and international treaties.
InstallShield
< Back
Next >
Cancel

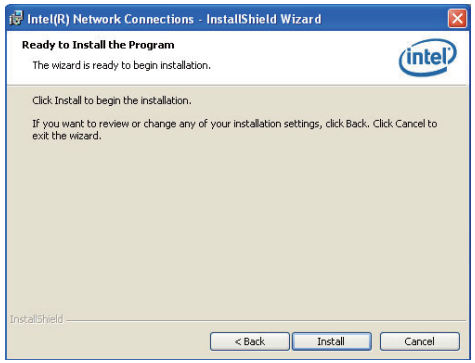
2. Click “I accept the terms in the license agreement” then click “Next”.


Intel(R) Network Connections - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
INTEL SOFTWARE LICENSE AGREEMENT (Final, License)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the “Software”) until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

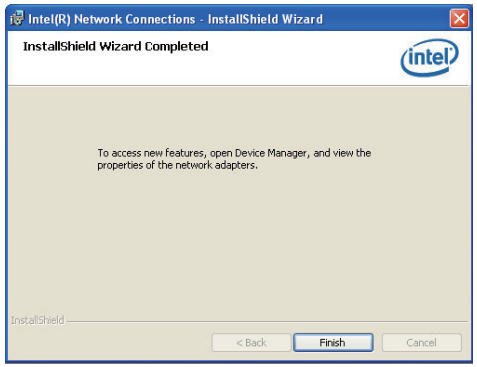
3. Select the program featuers you want installed then click Next.



4. Click Install to begin the installation.


Intel(R) Network Connections - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

5. After completing installation, click Finish.


Intel(R) Network Connections - InstallShield Wizard
InstallShield Wizard Completed
To access new features, open Device Manager, and view the properties of the network adapters.
InstallShield
< Back
Finish
Cancel

Intel LAN Drivers (For Windows 7)

To install the driver, click “Intel LAN Drivers” on the main menu.

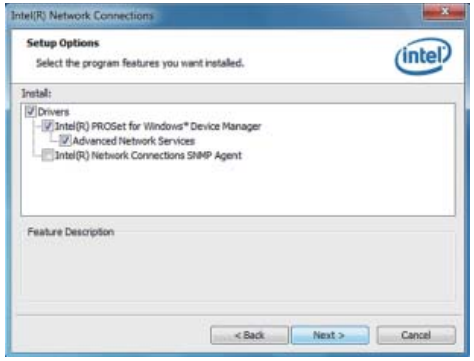
1. Setup is ready to install the driver. Click Next.

Intel(R) Network Connections - InstallShield Wizard
Welcome to the InstallShield Wizard for Intel(R) Network Connections
Installs drivers, Intel(R) PROSet for Windows* Device Manager, and Advanced Networking Services.
WARNING: This program is protected by copyright law and international treaties.
InstallShield
< Back
Next >
Cancel

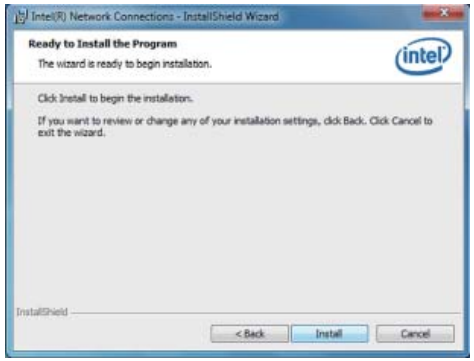
2. Click “I accept the terms in the license agreement” then click “Next”.

Intel(R) Network Connections - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
INTEL SOFTWARE LICENSE AGREEMENT (Final, License)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
LICENSES: Please Note:
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

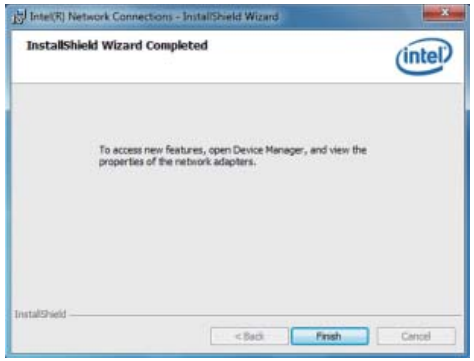
3. Select the program features you want installed then click Next.



4. Click Install to begin the installation.


Intel(R) Network Connections - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

5. After completing installation, click Finish.

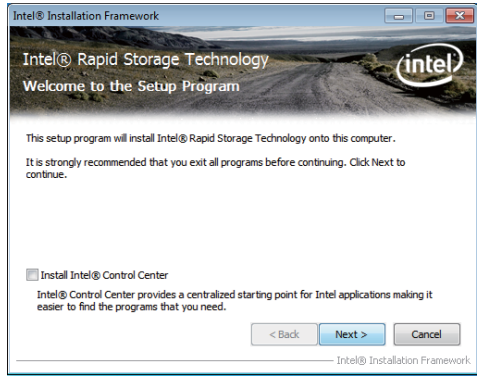

Intel(R) Network Connections - InstallShield Wizard
InstallShield Wizard Completed
To access new features, open Device Manager, and view the properties of the network adapters.
InstallShield
< Back
Finish
Cancel

Intel Rapid Storage Technology

The Intel Rapid Storage Technology is a utility that allows you to monitor the current status of the SATA drives. It enables enhanced performance and power management for the storage subsystem.

To install the driver, click “Intel Rapid Storage Technology” on the main menu.

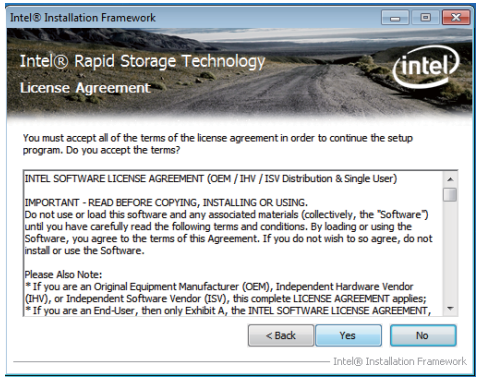
1. Setup is now ready to install the utility. Click Next.


Intel® Installation Framework
Intel® Rapid Storage Technology
Welcome to the Setup Program
This setup program will install Intel® Rapid Storage Technology onto this computer.
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
Install Intel® Control Center
Intel® Control Center provides a centralized starting point for Intel applications making it easier to find the programs that you need.
< Back
Next >
Cancel
Intel® Installation Framework

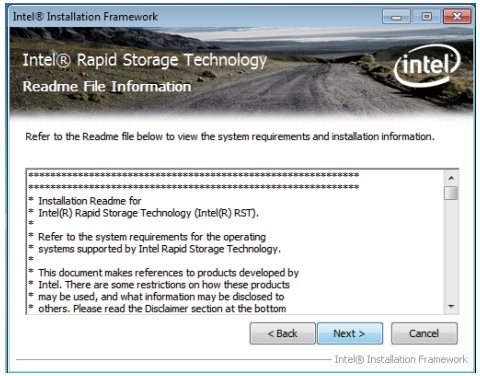
2. Read the warning then click Yes.

Intel® Installation Framework
Intel® Rapid Storage Technology
Warning
The Intel® Rapid Storage Technology driver you are about to install may be used to control the hard drive that this computer boots from or to control a hard drive that contains important data. Therefore, you will not be able to uninstall this driver after installation. However, you will be able to uninstall the non-critical components of this software such as the User Interface, Event Monitor Service, and program shortcuts.
Click Next to continue, or click Cancel to exit the setup program.
< Back
Next >
Cancel
Intel® Installation Framework

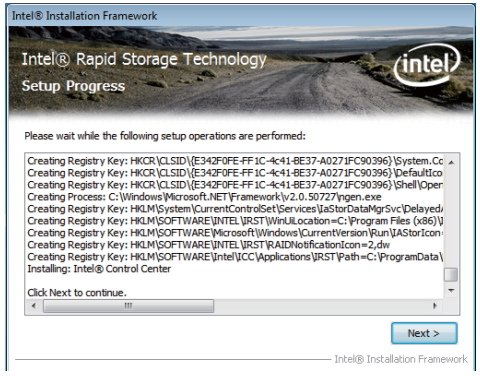
3. Read the license agreement then click Yes.


Intel® Installation Framework
Intel® Rapid Storage Technology
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

4. Go through the readme document for system requirements and installation tips then click Next.


Intel® Installation Framework
Intel® Rapid Storage Technology
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
* Installation Readme for
* Intel(R) Rapid Storage Technology (Intel(R) RST).
* Refer to the system requirements for the operating
* systems supported by Intel Rapid Storage Technology.
* This document makes references to products developed by
* Intel. There are some restrictions on how these products
* may be used, and what information may be disclosed to
* others. Please read the Disclaimer section at the bottom
< Back
Next >
Cancel
Intel® Installation Framework

5. Setup is now installing the utility. Click Next to continue.

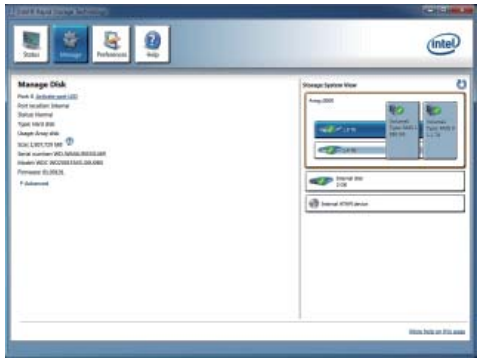

Intel® Installation Framework
Intel® Rapid Storage Technology
Setup Progress
Please wait while the following setup operations are performed:
Creating Registry Key: HKCR\CLSID\{E342F0FE-FF1C-4c41-BE37-A0271FC90396}\System.Co
Creating Registry Key: HKCR\CLSID\{E342F0FE-FF1C-4c41-BE37-A0271FC90396}\DefaultIco
Creating Registry Key: HKCR\CLSID\{E342F0FE-FF1C-4c41-BE37-A0271FC90396}\Shell\Oper
Creating Process: C:\Windows\Microsoft.NET\Framework\v2.0.50727\ngen.exe
Creating Registry Key: HKLM\System\CurrentControlSet\Services\IaStorDataMgrSvc\Delayed
Creating Registry Key: HKLM\SOFTWARE\INTEL\IRST\WinUILocation=C:\Program Files (x86)\I
Creating Registry Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run\IAStorIcon
Creating Registry Key: HKLM\SOFTWARE\INTEL\IRST\RAIDNotificationIcon=2,dw
Creating Registry Key: HKLM\SOFTWARE\Intel\ICC\Applications\IRST\Path=C:\ProgramData\
Installing: Intel® Control Center
Click Next to continue.
Next >
Intel® Installation Framework

6. Click “Yes, I want to restart my computer now” then click Finish.

Restarting the system will allow the new software installation to take effect.

Intel® Installation Framework
Intel® Rapid Storage Technology
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

7. Run the Intel Matrix Storage Console utility to view the hard drives’ configuration.



F6 Floppy Configuration Utility

This is used to create a floppy driver diskette needed when you install Windows® XP using the F6 installation method. This will allow you to install the operating system onto a hard drive when in AHCI mode.

1. Insert a blank floppy diskette.

2. Locate for the drivers in the CD then copy them to the floppy diskette. The CD includes drivers for both 32-bit and 64-bit operating systems. The path to the drivers are shown below.

   32-bit
   CD Drive:\AHCI_RAID\F6FLOPPY\f6flpy32

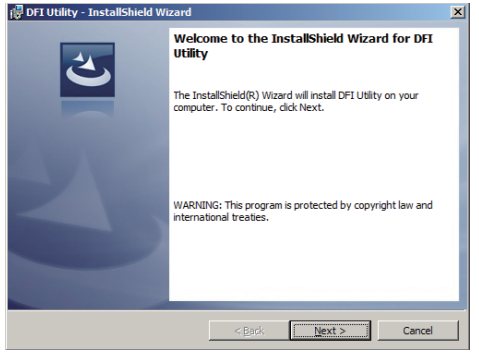
   64-bit
   CD Drive:\AHCI_RAID\F6FLOPPY\f6flpy64

DFI Utility

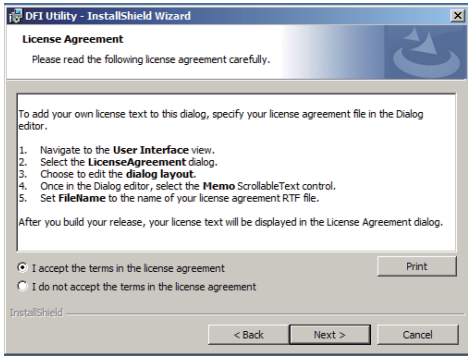
DFI Utility provides information about the board, Watchdog, DIO, and Backlight. To access the utility, click “DFI Utility” on the main menu.

Note:
If you are using Windows 7, you need to access the operating system as an administrator to be able to install the utility.

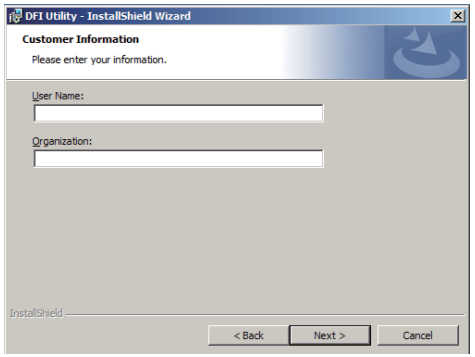
1. Setup is ready to instal the DFI Utility driver Click “Next”.


DFI Utility - InstallShield Wizard
Welcome to the InstallShield Wizard for DFI Utility
The InstallShield(R) Wizard will install DFI Utility on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

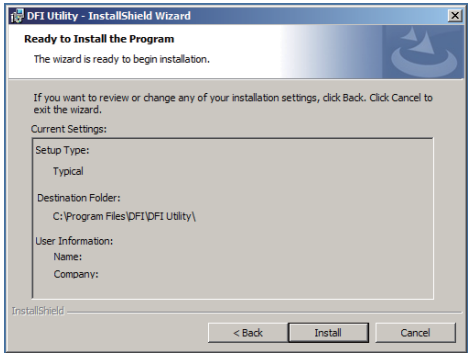
2. Click “I accept the terms in the license agreement” then click “Next”.


DFI Utility - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
To add your own license text to this dialog, specify your license agreement file in the Dialog editor.
1. Navigate to the User Interface view.
2. Select the LicenseAgreement dialog.
3. Choose to edit the dialog layout.
4. Once in the Dialog editor, select the Memo ScrollableText control.
5. Set FileName to the name of your license agreement RTF file.
After you build your release, your license text will be displayed in the License Agreement dialog.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

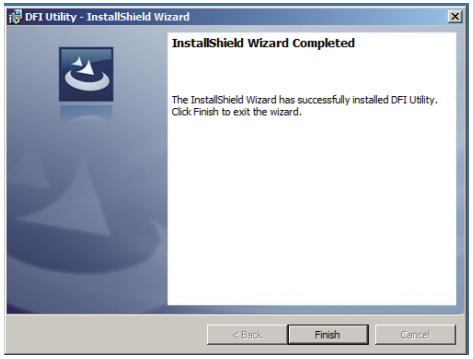
3. Enter “User name” and “Organization” information then click “Next”.



4. Click “Install” to begin the installation.



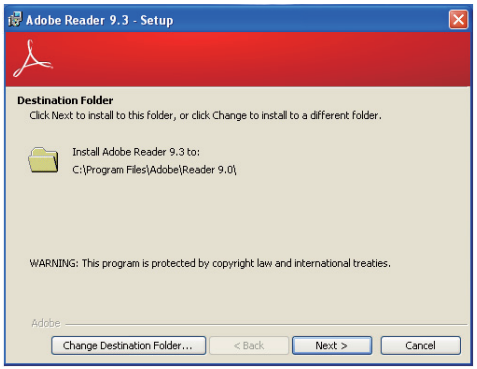
5. After completing installa tion, click “Finish”.


DFI Utility - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed DFI Utility. Click Finish to exit the wizard.
< Back
Finish
Cancel

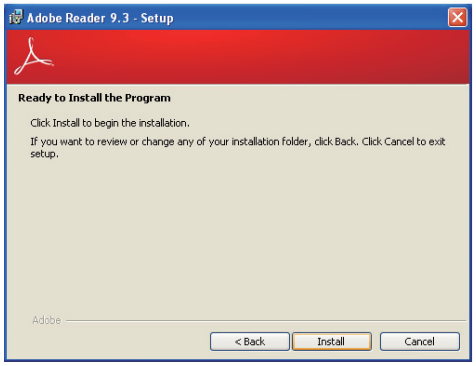
Adobe Acrobat Reader 9.3

To install the reader, click “Adobe Acrobat Reader 9.3” on the main menu.

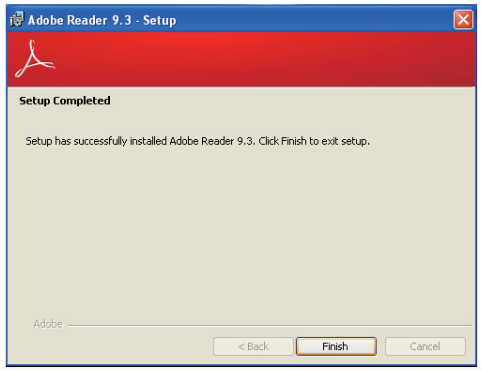
1. Click Next to install or click Change Destination Folder to select another folder.


Adobe Reader 9.3 - Setup
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install Adobe Reader 9.3 to:
C:\Program Files\Adobe\Reader 9.0\
WARNING: This program is protected by copyright law and international treaties.
Adobe
Change Destination Folder...
< Back
Next >
Cancel

2. Click Install to begin installation.


Adobe Reader 9.3 - Setup
Ready to Install the Program
Click Install to begin the installation.
If you want to review or change any of your installation folder, click Back. Click Cancel to exit setup.
Adobe
< Back
Install
Cancel

3. Click Finish to exit installation.



Appendix A - Watchdog Sample Code

```
;Software programming example:

;----------------------------------------------
;(1) Enter Super IO Configuration mode
;----------------------------------------------
MOV         DX,2EH
MOV         AL,87H
OUT         DX,AL
OUT         DX,AL

;--------------------------------------------------------------------------------
;(2) Configuration Logical Device 7, register CRF5/CRF6 (WDT Control /WDT
timer)
;--------------------------------------------------------------------------------
MOV         DX,2EH
MOV         AL,07H              ;Ready to Program Logical Device
OUT         DX,AL

MOV         DX,2FH
MOV         AL,07H              ;Select Logical Device 7
OUT         DX,AL

MOV         DX,2EH
MOV         AL, F6H             ;Select watchdog timer register
OUT         DX,AL

MOV         DX,2FH
MOV         AL,10H              ;Set watchdog timer value
OUT         DX,AL

MOV         DX,2EH
MOV         AL, F5H             ;Select watchdog Control Register
OUT         DX,AL

MOV         DX,2FH
MOV         AL,61H              ;Set Watchdog Control Value
OUT         DX,AL

;-----------------------------------------------------------------
;(1) Exit extended function mode
;-----------------------------------------------------------------
MOV          DX,2EH
MOV          AL,AAH
OUT           DX,AL
```

Appendix B - System Error Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.

Important:
Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

FLOPPY DISK(S) fail (80)

Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40)

Floppy type mismatch.

Hard Disk(s) fail (80)

HDD reset failed.

Hard Disk(s) fail (40)

HDD controller diagnostics failed.

Hard Disk(s) fail (20)

HDD initialization error.

Hard Disk(s) fail (10)

Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)

Sector Verify failed.

Keyboard is locked out - Unlock the key

The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

Keyboard error or no keyboard present

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop

System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for the M/B burn in test at the factory.

BIOS ROM checksum error - System halted

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail

The BIOS reports memory test fail if the memory has error(s).

Appendix C - Troubleshooting Checklist

Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

Monitor/Display

If the display screen remains dark after the system is turned on:

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.

The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card's output frequencies are supported by this monitor.

The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

Power Supply

When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

Floppy Drive

The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

Hard Drive

Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

Excessively long formatting period.

If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.
3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

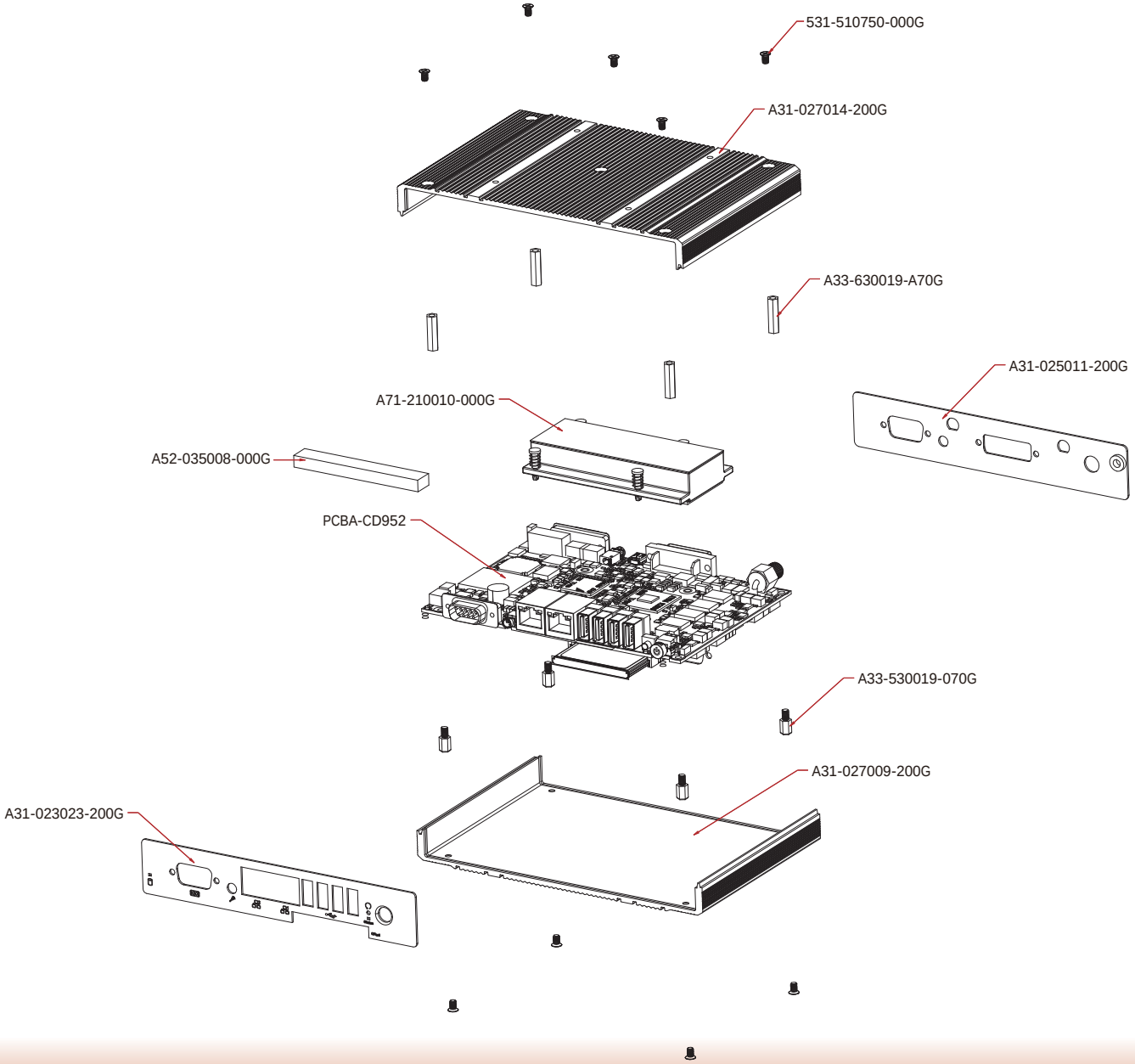
Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.
2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

System Board

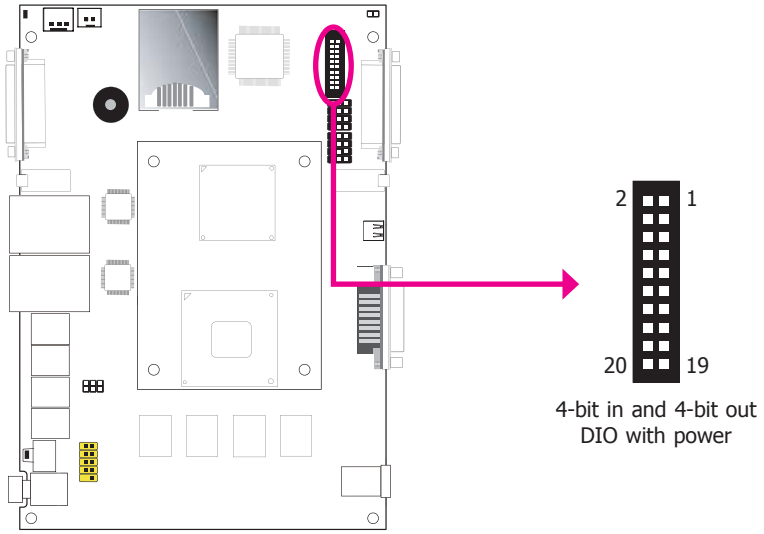
1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the memory sockets.
4. Make sure the memory modules are in the correct locations.
5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.

Appendix D - Exploded Diagram



Appendix E - Digital I/O User Guide

CD952 Series: Isolated 8-bit Digital I/O Pin Define

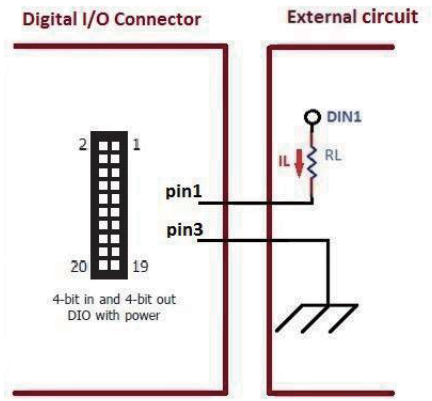


The 4-bit in and 4-bit out Digital I/O connector provides powering-on function to external devices that are connected to these connectors.

Digital I/O Connector

Pins	Function	Pins	Function
1	DIN0A	2	DOUT0A
3	DIN0B	4	DOUT0B
5	DIN1A	6	DOUT1A
7	DIN1B	8	DOUT1B
9	DIN2A	10	DOUT2A
11	DIN2B	12	DOUT2B
13	DIN3A	14	DOUT3A
15	DIN3B	16	DOUT3B
17	+5V	18	+5V_standby
19	GND	20	GND

DIN Example with DIN0A/DIN0B

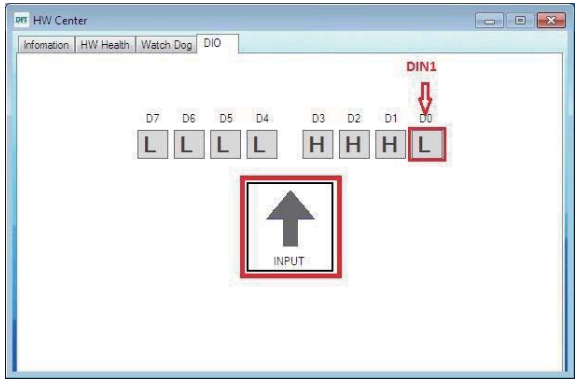


IL max: 50mA
For example:
DIN= 5V
RL= 500Ω
IL= 1mA

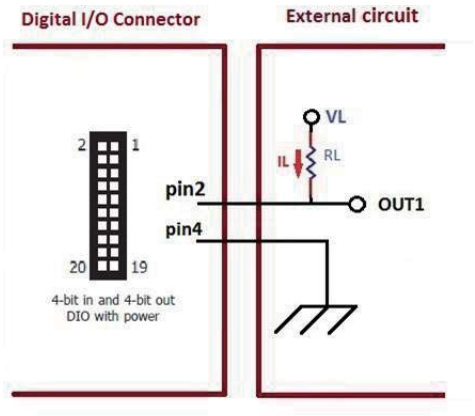
DFI DIO Utility D0	DIN1
H	L
L	H

Set DIO at Input Mode

Example1 DIN1= 5V D0 to L.



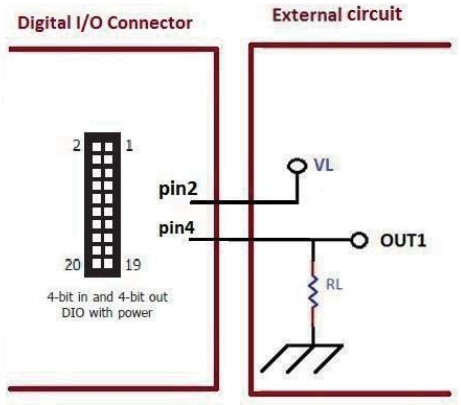
DOUT Example1 with Dout0A/Dout0B



VL: 60V max
IL max: 600mA
For example:
VL= 5V
RL= 1KΩ
IL= 5mA

DFI DIO Utility D4	OUT1
H	L
L	H

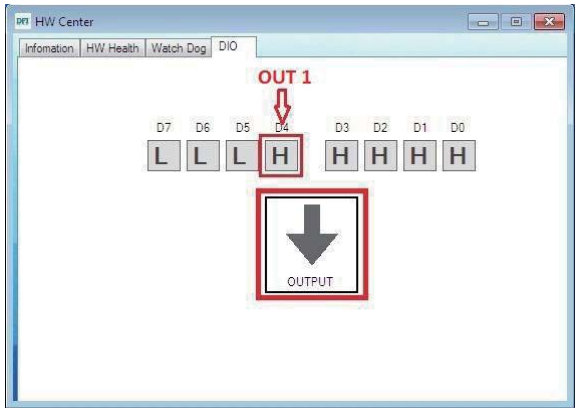
DOUT Example2 with Dout0A/Dout0B



DFI DIO Utility D4	OUT1
H	H
L	L

Set DIO at Output Mode, Press D4 to H

Example1 OUT1 to Low.
Example2 OUT1 to High.

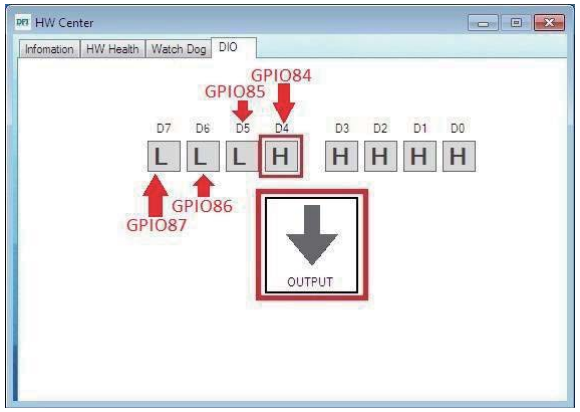


According DIO pin to GPIO Programming Setting

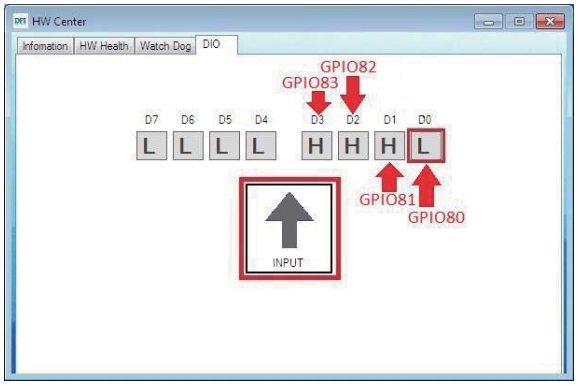
Pins	Function	
1	DIN0A	→ Couple for GPIO 80
3	DIN0B	
5	DIN1A	→ Couple for GPIO 81
7	DIN1B	
9	DIN2A	→ Couple for GPIO 82
11	DIN2B	
13	DIN3A	→ Couple for GPIO 83
15	DIN3B	
17	+5V	
19	GND	

Pins	Function	
2	DOUT0A	→ Couple for GPIO 84
4	DOUT0B	
6	DOUT1A	→ Couple for GPIO 85
8	DOUT1B	
10	DOUT2A	→ Couple for GPIO 86
12	DOUT2B	
14	DOUT3A	→ Couple for GPIO 87
16	DOUT3B	
18	+5V_standby	
20	GND	

DOUT MAP



DIN MAP



Digital I/O Proramming Guide

1. Pins for Digital I/O

Item	Standard
GPIO80 (Pin111)	GP80
GPIO81 (Pin112)	GP81
GPIO82 (Pin113)	GP82
GPIO83 (Pin114)	GP83
GPIO84 (Pin115)	GP84
GPIO85 (Pin116)	GP85
GPIO86 (Pin117)	GP86
GPIO87 (Pin118)	GP87
GPIO71 (Pin104)	CTR-GP71
GPIO72 (Pin105)	CTR-GP72

2. Programming Guide

To program the F81866A configuration registers, the following configuration procedures must be followed in sequence:

(1) Enter the Extended Function Mode
(2) Configure the configuration registers
(3) Exit the Extended Function Mode

The configuration register is used to control the behavior of the corresponding devices. To configure the register, using the index port to select the index and then writing data port to alter the parameters. The default index port and data port are 0x4E and 0x4F respectively. **Pull down the SOUT1 pin to change the default value to 0x2E/0x2F. To enable configuration, the entry key 0x87 must be written to the index port. To disable configuration, write exit entry key 0xAA to the index port.** Following is an example to enable configuration and disable configuration by using debug.

-o 4e 87
-o 4e 87 (enable configuration)
-o 4e aa (disable configuration)

3. Relative Registers

Logic Device Number Register (LDN) — Index 07h

Bit	Name	R/W	Default	Description
7-0	LDN	R/W	00h	00h: Select FDC device configuration registers. 03h: Select Parallel Port device configuration registers. 04h: Select Hardware Monitor device configuration registers. 05h: Select KBC device configuration registers. 06h: Select GPIO device configuration registers. 07h: Select WDT device configuration registers. 0Ah: Select PME, ACPI and ERP device configuration registers. 10h: Select COM1 device configuration registers. 11h: Select COM2 device configuration registers. 12h: Select COM3 device configuration registers. 13h: Select COM4 device configuration registers. 14h: Select COM5 device configuration registers. 15h: Select COM6 device configuration registers. Otherwise: Reserved.

GPIO8 Output Enable Register — Index 88h

Bit	Name	R/W	Default	Description
7	GPIO87_OE	R/W	0	0: GPIO87 is in input mode. 1: GPIO87 is in output mode.
6	GPIO86_OE	R/W	0	0: GPIO86 is in input mode. 1: GPIO86 is in output mode.
5	GPIO85_OE	R/W	0	0: GPIO85 is in input mode. 1: GPIO85 is in output mode.
4	GPIO84_OE	R/W	0	0: GPIO84 is in input mode. 1: GPIO84 is in output mode.
3	GPIO83_OE	R/W	0	0: GPIO83 is in input mode. 1: GPIO83 is in output mode.
2	GPIO82_OE	R/W	0	0: GPIO82 is in input mode. 1: GPIO82 is in output mode.
1	GPIO81_OE	R/W	0	0: GPIO81 is in input mode. 1: GPIO81 is in output mode.
0	GPIO80_OE	R/W	0	0: GPIO80 is in input mode. 1: GPIO80 is in output mode.

GPIO8 Output Data Register — Index 89h (This byte could be also written by base address + 2)

Bit	Name	R/W	Default	Description
7	GPIO87_VAL	R/W	1	0: GPIO87 outputs 0 when in output mode. 1: GPIO87 outputs 1 when in output mode.
6	GPIO86_VAL	R/W	1	0: GPIO86 outputs 0 when in output mode. 1: GPIO86 outputs 1 when in output mode.
5	GPIO85_VAL	R/W	1	0: GPIO85 outputs 0 when in output mode. 1: GPIO85 outputs 1 when in output mode.
4	GPIO84_VAL	R/W	1	0: GPIO84 outputs 0 when in output mode. 1: GPIO84 outputs 1 when in output mode.
3	GPIO83_VAL	R/W	1	0: GPIO83 outputs 0 when in output mode. 1: GPIO83 outputs 1 when in output mode.
2	GPIO82_VAL	R/W	1	0: GPIO82 outputs 0 when in output mode. 1: GPIO82 outputs 1 when in output mode.
1	GPIO81_VAL	R/W	1	0: GPIO81 outputs 0 when in output mode. 1: GPIO81 outputs 1 when in output mode.
0	GPIO80_VAL	R/W	1	0: GPIO80 outputs 0 when in output mode. 1: GPIO80 outputs 1 when in output mode.

GPIO7 Output Enable Register — Index 80h

Bit	Name	R/W	Default	Description
7	GPIO77_OE	R/W	0	0: GPIO77 is in input mode. 1: GPIO77 is in output mode.
6	GPIO76_OE	R/W	0	0: GPIO76 is in input mode. 1: GPIO75 is in output mode.
5	GPIO75_OE	R/W	0	0: GPIO75 is in input mode. 1: GPIO75 is in output mode.
4	GPIO74_OE	R/W	0	0: GPIO74 is in input mode. 1: GPIO74 is in output mode.
3	GPIO73_OE	R/W	0	0: GPIO73 is in input mode. 1: GPIO73 is in output mode.
2	GPIO72_OE	R/W	0	0: GPIO72 is in input mode. 1: GPIO72 is in output mode.
1	GPIO71_OE	R/W	0	0: GPIO71 is in input mode. 1: GPIO71 is in output mode.
0	GPIO70_OE	R/W	0	0: GPIO70 is in input mode. 1: GPIO70 is in output mode.

GPIO7 Output Data Register — Index 81h (This byte could be also written by base address + 3)

Bit	Name	R/W	Default	Description
7	GPIO77_VAL	R/W	1	0: GPIO77 outputs 0 when in output mode. 1: GPIO77 outputs 1 when in output mode.
6	GPIO76_VAL	R/W	1	0: GPIO76 outputs 0 when in output mode. 1: GPIO76 outputs 1 when in output mode.
5	GPIO75_VAL	R/W	1	0: GPIO75 outputs 0 when in output mode. 1: GPIO75 outputs 1 when in output mode.
4	GPIO74_VAL	R/W	1	0: GPIO74 outputs 0 when in output mode. 1: GPIO74 outputs 1 when in output mode.
3	GPIO73_VAL	R/W	1	0: GPIO73 outputs 0 when in output mode. 1: GPIO73 outputs 1 when in output mode.
2	GPIO72_VAL	R/W	1	0: GPIO72 outputs 0 when in output mode. 1: GPIO72 outputs 1 when in output mode.
1	GPIO71_VAL	R/W	1	0: GPIO71 outputs 0 when in output mode. 1: GPIO71 outputs 1 when in output mode.
0	GPIO70_VAL	R/W	1	0: GPIO70 outputs 0 when in output mode. 1: GPIO70 outputs 1 when in output mode.

4. Sample Code in C Language

4.1 Control of GP03, GP02 and GP07

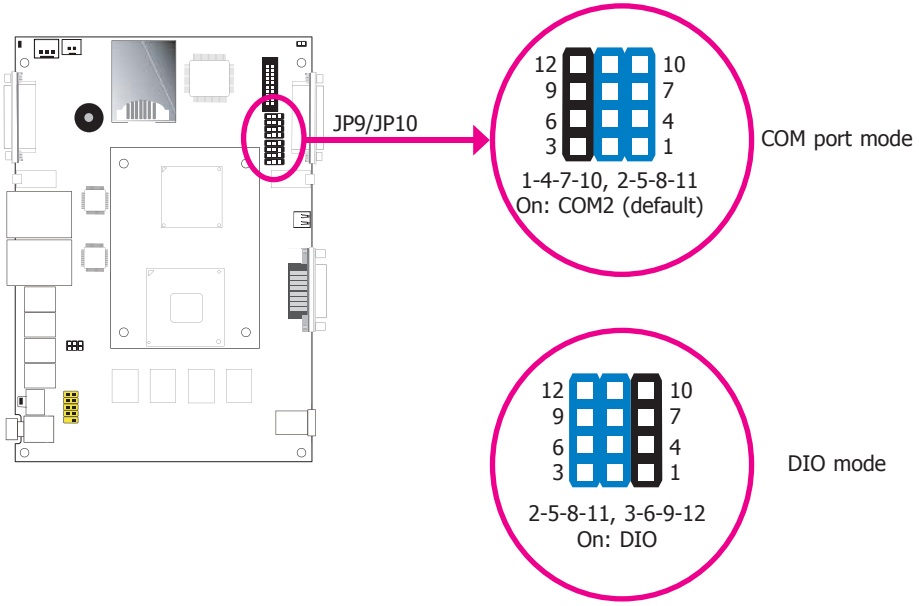
```
#define AddrPort 0x2E
#define DataPort 0x2F

<Enter the Extended Function Mode>
WriteByte(AddrPort, 0x87)
WriteByte(AddrPort, 0x87) //Must write twice to entering
Extended mode

<Select Logic Device>
WriteByte(AddrPort, 0x07)
WriteByte(AddrPort, 0x06)
//Select logic device 06h

<Output Mode Selection>//SetGPIO71/72 to output Mode
WriteByte(AddrPort, 0x80)// Select configuration register 80h
WriteByte(DataPort, (ReadByte(DataPort) | 0x06))
//Set (bit 0/1) = (1) to select GPIO 71/72 as Output mode.

<Output Value>
WriteByte(AddrPort, 0x81)// Select configuration register 81h
WriteByte(DataPort, Value)// Set bit n=(1/2) to output GPI07n
as Low or High

<Leave the Extended Function Mode>
WriteByte(AddrPort, 0xAA)
```

4.2 Control of GP80 to GP87

```
#define AddrPort 0x2E
#define DataPort 0x2F

<Enter the Extended Function Mode>
WriteByte(AddrPort, 0x87)
WriteByte(AddrPort, 0x87) //Must write twice to entering
Extended mode

<Select Logic Device>
WriteByte(AddrPort, 0x07)
WriteByte(DataPort, 0x06)// Select logic device 06h

<Output/Input Mode Selection>//SetGP80 to GP87 I/O Mode
WriteByte(AddrPort, 0x88)// Select configuration register 88h
WriteByte(DataPort, (ReadByte(DataPort) & 0xXX))
//Set (bit n) = (1/0) to select GP 8n as Output/Input mode.
<Get Input Value>
WriteByte(AddrPort, 0x8A)// Select configuration register 8Ah
Data = ReadByte(DataPort)// The "Data" represent the input value of GP80~87

<Output Value>
WriteByte(AddrPort, 0x89)// Select configuration register 89h
WriteByte(DataPort, Value)// Set bit n=(0/1) to output GP 8n
as Low or High

<Leave the Extended Function Mode>
WriteByte(AddrPort, 0xAA)
```

CD952 Series: Isolated 4-bit Digital I/O Jumper Setting

COM2/DIO Select

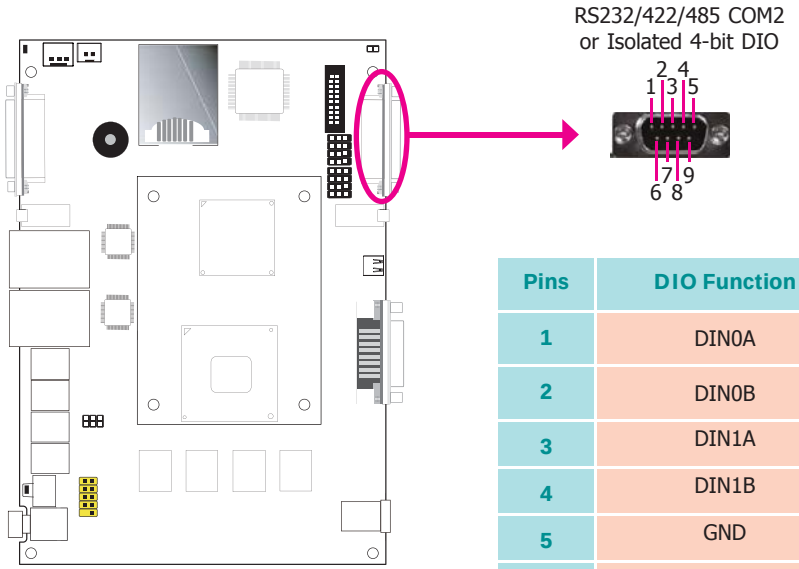


The system board uses JP9 and JP10 to select between RS232/422/485 COM2 or isolated 4-bit DIO at the rear panel.

Note:
You cannot use COM2 and DIO at the same time. Please set up JP9 and JP10 at the same time.

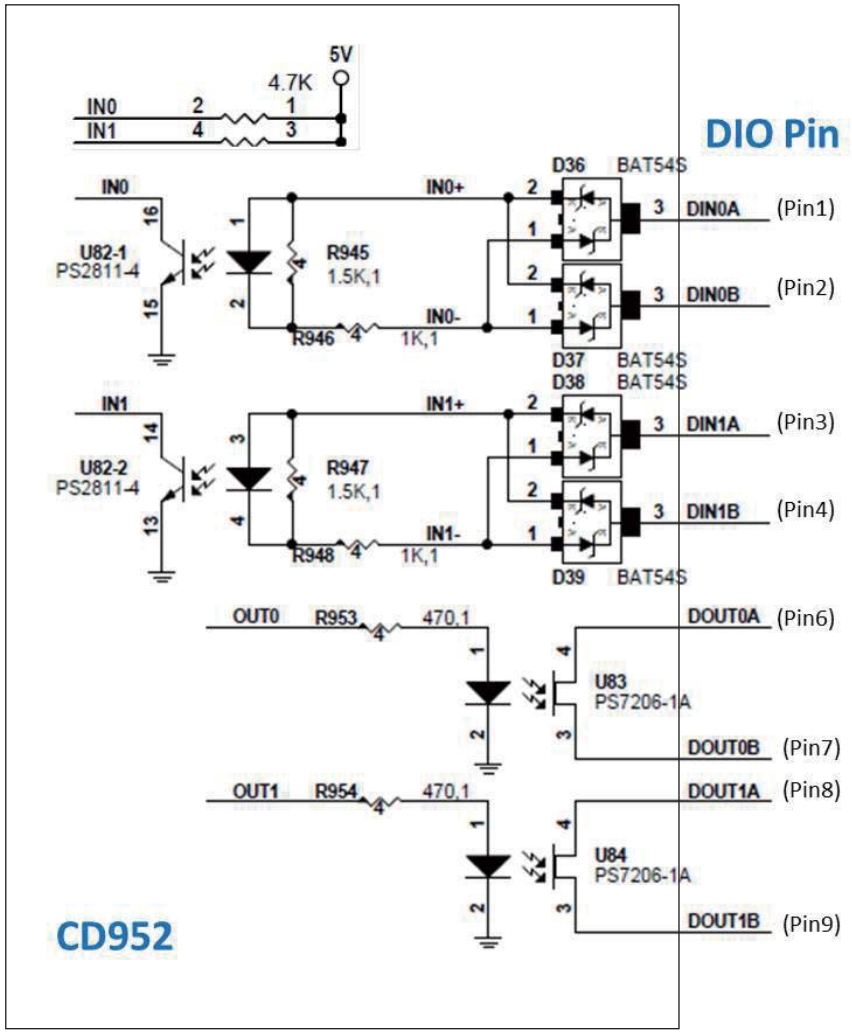
CD952 Series: Isolated 4-bit Digital I/O Pin Define

COM2 (Serial) Port/ Isolated 4-bit DIO



Pins	DIO Function
1	DIN0A
2	DIN0B
3	DIN1A
4	DIN1B
5	GND
6	DOUT0A
7	DOUT0B
8	DOUT1A
9	DOUT1B

Isolated 4-bit Digital I/O Input Request



Pins	Input Request
*1	5V~12V
2	GND
*3	5V~12V
4	GND
5	GND
*6	Loading AC or DC 5V~60V
7	
*8	Loading AC or DC 5V~60V
9	

ABSOLUTE MAXIMUM RATINGS SPECIFICATION

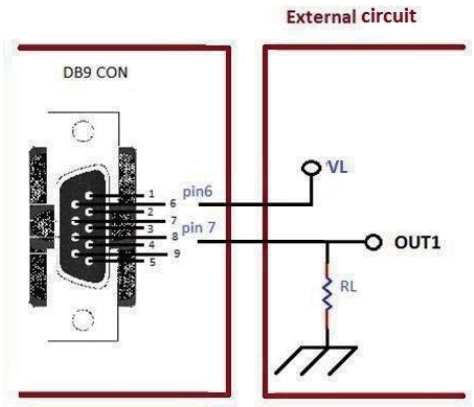
*Pin1/Pin3 :
- Diode forward current(DC) rating IF =50mA/ch.

*Pin6/Pin8 :
- MOS FET Continuous Load Current rating IL =600mA.

4-bit (2-bit in and 2-bit out) description

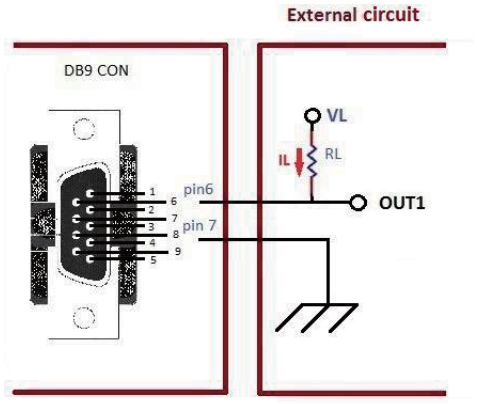
Pins	Input Request	
*1	5V~12V	Pin 1 and 2 are couple, DIN1
2	GND	
*3	5V~12V	Pin 3 and 4 are couple, DIN2
4	GND	
5	GND	
*6	Loading AC or DC 5V~60V	Pin 6 and 7 are couple, OUT1
7		
*8	Loading AC or DC 5V~60V	Pin 8 and 9 are couple, OUT2
9		

DOUT Example2 with Dout0A/Dout0B



DFI DIO Utility D4	OUT1
H	H
L	L

DOUT Example1 with Dout0A/Dout0B

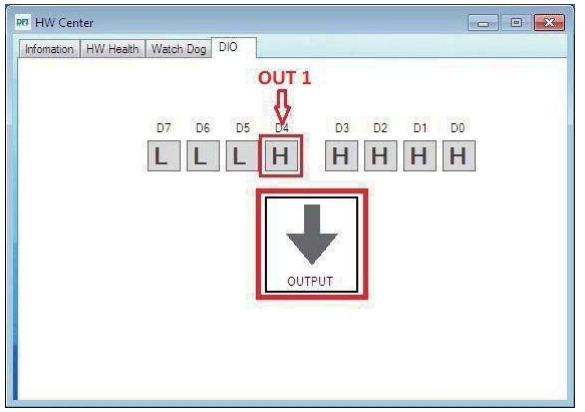


VL: 60V max
IL max: 600mA
For example:
VL= 5V
RL= 1KΩ
IL= 5mA

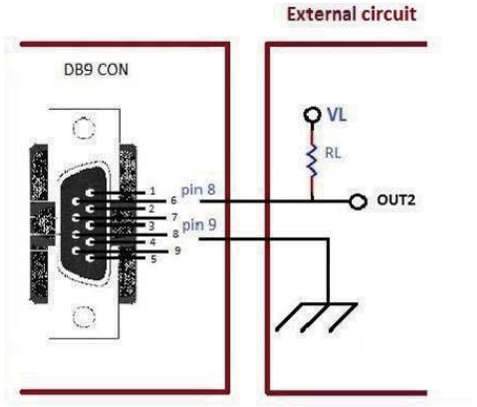
DFI DIO Utility D4	OUT1
H	L
L	H

Set DIO at Output Mode, Press D4 to H

Example1 OUT1 to Low.
Example2 OUT1 to High.



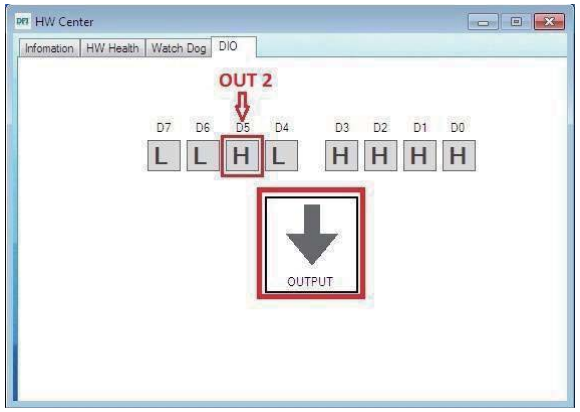
DOUT Example3 with Dout1A/Dout1B



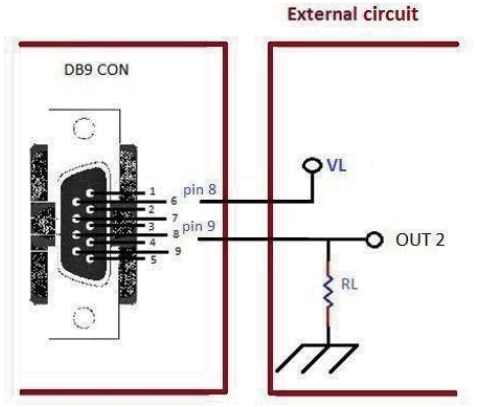
DFI DIO Utility D5	OUT2
H	L
L	H

Set DIO at Output Mode, Press D5 to H

Example3 OUT2 to Low.
Example4 OUT2 to High.

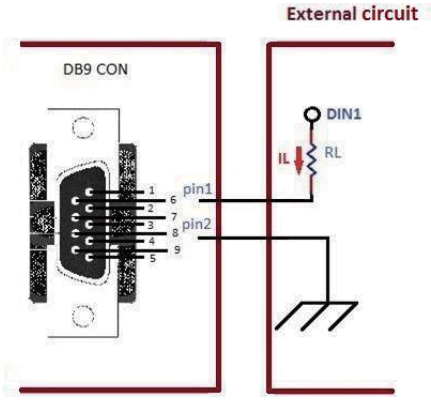


DOUT Example4 with Dout1A/Dout1B



DFI DIO Utility D5	OUT2
H	H
L	L

DIN Example1 with DIN0A/DIN0B

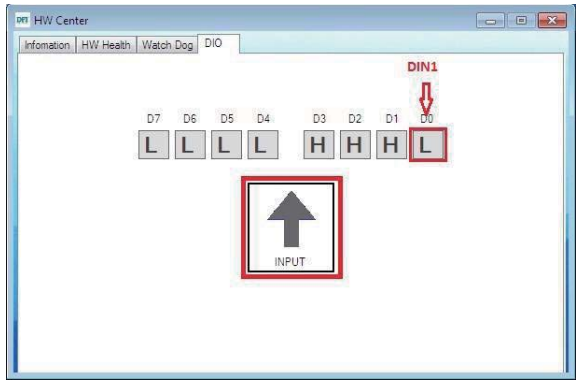


IL max: 50mA
For example:
DIN= 5V
RL= 500Ω
IL= 1mA

DFI DIO Utility D0	OUT1
H	L
L	H

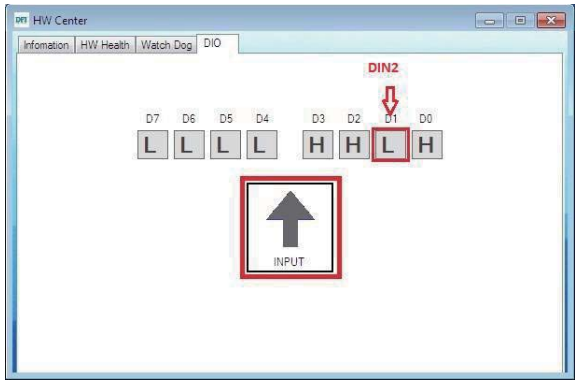
Set DIO at Input Mode

Example1 DIN1= 5V D0 to L

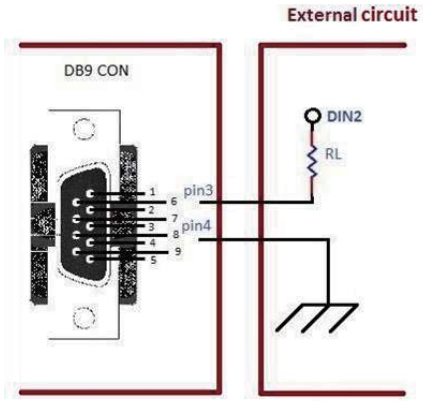


Set DIO at Input Mode

Example2 DIN2= 5V D1 to L



DIN Example1 with DIN1A/DIN1B



DFI DIO Utility D1	OUT2
H	L
L	H